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Bulletin 116

THE DIPTEROUS GENUS DOLICHOPUS LATREILLE IN NORTH AMERICA

BY

M. C. VAN DUZEE, F. R. COLE
AND
J. M. ALDRICH

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ADVERTISEMENT.

The scientific publications of the United States National Museum consist of two series, the *Proceedings* and the *Bulletins*.

The *Proceedings*, the first volume of which was issued in 1878, are intended primarily as a medium for the publication of original, and usually brief, papers based on the collections of the National Museum, presenting newly acquired facts in zoology, geology, and anthropology, including descriptions of new forms of animals, and revisions of limited groups. One or two volumes are issued annually and distributed to libraries and scientific organizations. A limited number of copies of each paper, in pamphlet form, is distributed to specialists and others interested in the different subjects, as soon as printed. The dates of publication are recorded in the tables of contents of the volumes.

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Since 1902 a series of octavo volumes containing papers relating to the botanical collections of the Museum, and known as the *Contributions from the National Herbarium*, has been published as bulletins.

The present work forms No. 116, of the *Bulletin* series.

William deC. Ravenel,
Administrative Assistant to the Secretary,
in charge of the United States National Museum.

Washington, D. C., *November 15, 1920.*

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THE DIPTEROUS GENUS DOLICHOPUS LATREILLE IN NORTH AMERICA.

By M. C. Van Duzee, F. R. Cole, and J. M. Aldrich.

INTRODUCTION.

By J. M. ALDRICH.

The dipterous family Dolichopodidae offers such a storehouse of material bearing upon the Darwinian theory of sexual selection that its many beautiful and easily classified species ought to be much more widely known among those who give attention to the larger biological problems. In the present paper a large number of secondary sexual characters are figured, not only as aids to identification, but to give some idea of the wealth of beautiful structures which have been developed in the males of this genus. The species are so abundant and accessible everywhere in the United States and Canada, as well as Europe, that their peculiar mating habits ought to be recorded for many, instead of the five which are given a few paragraphs farther on.

The family is readily distinguished by a few characters. Its members have antennae with three simple joints and an arista; the tarsi with empodia not pulvilliform; palpi with only one joint; basal cells of wing very small, the second confluent with the discal, anterior cross-vein close to base of wing. The species almost universally have bright metallic green and blue colors.

Among the genera of this family are two which are strikingly rich in species—*Psilopus*, with a widely divergent fork on the third vein, which is widespread in the tropics everywhere, and occurs also in temperate zones; and *Dolichopus*, recognized by having several spines on the upper side of the hind basitarsi, which has a circumpolar distribution in the northern hemisphere, extending southward pretty well across the north temperate zone.

The presence of the spines just mentioned on the upper side of the hind basitarsi is a sufficient diagnostic character to separate the genus *Dolichopus* from all others known in North America; it would serve equally well throughout the species of the rest of the world by adding that the arista is never plumose. The Ethiopian and oriental *Rhagoneurus* Loew (*Lichwardtia* Enderlein, 1912) has a plumose arista and a single spine on the hind basitarsus.

The first antennal joint is hairy above; the vertex not much hollowed, never obliterated by the approximation of the eyes; thorax slightly compressed, rather high in front, with short, rounded scutellum; abdomen also somewhat compressed, the male hypopygium long, bent forward under the venter. Hind cross-vein about in the middle of the wing field (disregarding the narrow basal portion); fourth vein rather strongly bicurved beyond it, rarely with one or both of the curves extending into a short stump, ending in or more often well before the apex. The accompanying figure (fig. 1) shows well the general characters.

For purposes of classification the characters fall very readily into two groups, those which occur only in the male and those which occur in both sexes. Of the former there are very many, and in general they are easy to see and very striking; hence the males are much easier to identify than the females. Characters available for both sexes are color of legs and antennae; color of the infra-orbital cilia—a row of erect small hairs behind the eye, the upper ones of which are always black; color of the cilia of the calypters—delicate outstanding hairs on the little padlike organ just below and behind the wing; usually the venation; and some others.

Male characters occur in many places; the antennae may be elongated or swollen, the arista may have the appearance of a spearhead at apex, the face may be bright silvery or pure brown in its pollen, and elongated below; the front tarsi may be long or short in various joints, and often are compressed and enlarged on the apical one, two, or three joints, which may be white, black, or silvery; the front empodia may be plumelike; the middle tarsi or even the hind ones may be ornamented instead of the front ones; the tibiae sometimes partake of the ornamentation of their tarsi; the hind femora may bear long cilia below, light or dark; the costa may be variously thickened; the apical half of the wing may contain a distinct black spot or a dark shade; and the posterior margin of the wing toward the base is often excised, emarginate or lobed. There are a few other characters of this class. The lamellae of the hypopygium have numerous peculiar modifications.

Most of these characters are distinctly of the nature of male ornaments. In several cases the male has been observed to display them before the female very assiduously. In the American Naturalist,[1] I described the behavior of *Dolichopus tenuipes* Aldrich (it was then an undescribed species) and of *D. crenatus* Osten Sacken. I quote these observations in order to bring together all the information that I have relating to these habits in the genus:

> [*Dolichopus tenuipes* Aldrich] has the fore tarsi in the male exceedingly elongated and slender, with the last joint in the shape of a comparatively large, oval black disk

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[1] Vol. 28, 1894, 35–37.

[fig. 207*a*, this article] * * * I observed in September the maneuvers of the male in courting the female. He would place himself directly in front of her, at a distance of about half an inch, with his face toward her. He would then rapidly vibrate his wings, holding them horizontally at right angles to the body; and at the same time would give these fore feet an up and down motion, raising them simultaneously to the level of the head and bring them down with a slight force upon the ground, the movement recurring in a measured way in about half a second. This he would continue for about 10 seconds; then, rising on the wing, he would swiftly make a small semicircle in the air and attempt to alight upon the female. In the large number of cases that I observed, he was always unsuccessful, the female hastily moving away a few inches, when the male would usually alight before her and repeat the movements. * * * I saw the same maneuver repeated hundreds of times. * * *

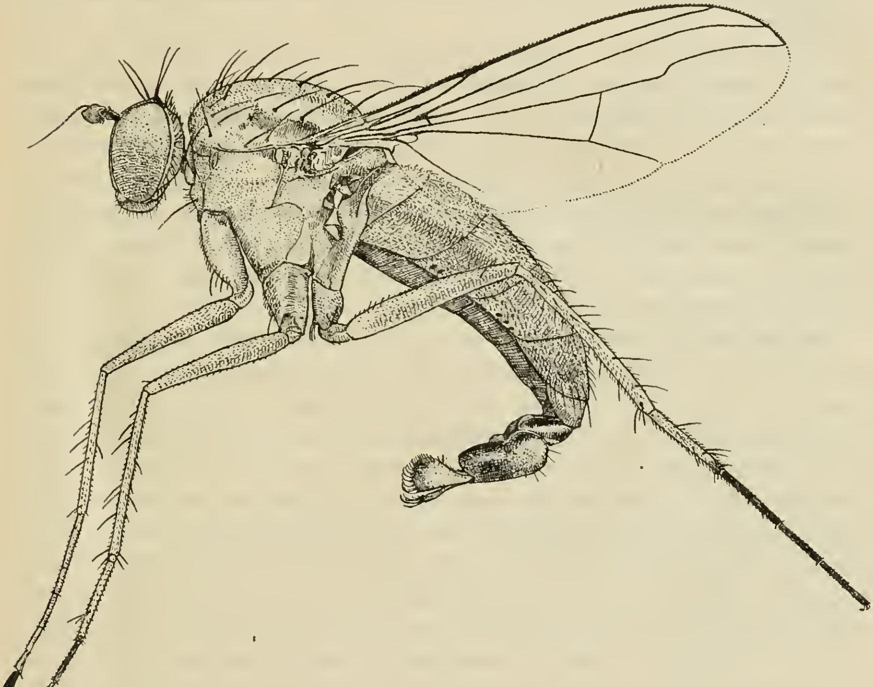

FIG. 1.—DOLICHOPUS BOLSTERI, NEW SPECIES.

In company with the species just mentioned occurred considerable numbers of * * * *crenatus* O. S. These were engaged in a similar occupation. The male of this species has only plain tarsi, but differs from the female in having the antennal joints longer, the first two with coarse black hair, and the arista of the third joint heavily covered with a black pubescence [fig. 159*a*, this article]; the face is also longer, the wings broader, and the cilia of the calypters, instead of being coarse and chiefly black, are fine and white. The male hovers in the air before the female at a distance of one or two inches, occasionally making a slight darting motion towards her. In this position the peculiarities of his face and antennae are shown to the best advantage.

In the Zoologischer Anzeiger for April, 1889, Friedrich Dahl has described the actions of *Dolichopus plumipes* Scopoli, as he observed them in Germany. The species is common also in the United States. I translate as follows:

> The male of the fly possesses on the first tarsal joint a beautiful, regular fringe [the fringe is on middle tibia and tarsus, our fig. 128*a*—J. M. A.], the purpose of which is not immediately perceptible. * * * I have now observed the pairing of these insects, and am convinced that the structure serves as an actual ornament to the male. * * * The male came flying up, and hovered for a time so close over the quietly resting female that the fringed tarsi hung down immediately before her eyes.

I can add similar observations on two more species, not hitherto published.

Dolichopus aldrichii Wheeler is a species quite common on wet earth at edge of water at Moscow, Idaho. The male has plain front tarsi, but the middle ones (fig. 182*a*) are elongated and thickened and very black. The male takes up a position on the earth in front of the female and facing her, an inch or so away. He then vibrates his wings, holding them at right angles to the body, and at the same time elevates the long middle legs, holding them also horizontally at right angles to the body, and describes a small circle with them, both together, very like the setting up drill of military cadets.

Dolichopus longimanus Loew is a species with much elongated front tarsi (fig. 138*a*, last four joints), the last joint being black and enlarged. I observed the courtship on the trunks of trees at Simpson Park, Big Stone City, South Dakota, in 1896, and although I have no notes I believe I can record the facts even yet. The male approaches the female directly from behind (below, as on vertical surfaces they always face upward); he walks on the tips of his toes with his front feet, assuming in consequence a reared-up attitude. As he comes to the female he advances his front tarsi on each side of her until their tips are even with her head, which is about as far as they can be extended. Then he deliberately raises the tarsi until the enlarged apical joint touches on each side the eye of the female, continuing the movement upward. But just as his tarsi touch her eyes, he advances his hypopygium and attempts to grasp the tip of her abdomen. She immediately dodges away, and the performance is repeated.

In the five species reported, it will be noted that the movements are quite different for each. There is no doubt whatever that many other species can very easily be observed in their characteristic behavior.

The larval habits are very slightly known for the entire family, and especially for this genus, a surprising fact when the abundance of adults is considered. Hart [2] describes three undetermined larvae, which Malloch,[3] refers to *Dolichopus*, giving a figure of one of them.[4] One was taken boring in decaying and watersoaked stems of rushes, floating in water near Havana, Illinois; the second was taken with dip net and sieve from mud at bottom of the Illinois River at Havana; the third from earth in bottom land in the same vicinity. From the great abundance of adults at edge of water on mud in Idaho, I had long supposed that the larvae must breed in rich, wet earth; if there had been any truly aquatic forms there I must have seen them.

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[2] Bull. Ill. State Lab. N. H., vol. 4, 1895, p. 268.

[3] Idem., vol. 12, 1917, p. 406.

[4] Pl. 57, fig. 3.

The larvae are maggot-like, with eleven segments behind the poorly developed head, of which five or six bear fleshy protuberances for locomotion on the under side, provided with hooks, but imperfectly paired, end of abdomen with two upper and two lower lobes, the small posterior spiracles on the upper; anterior pair of spiracles very minute. The head is of peculiar reduced structure, with vertical hooks inside an open chitinous frame. The classical description is of *Dolichopus ungulatus* (as *aeneus*) by Brauer.[5] This larva was found in decomposing wood inside a hollow tree.

The adults, as already remarked, are most abundant at the edge of water on mud; some species, however, are regularly found on foliage in half-shady places. Few are ever found in dry localities. They are very local, and even those species which have been collected in a dozen States are only to be found in just the right situation with regard to sunlight, moisture, and vegetation; a few feet away the search may be vain.

The species are most numerous in decidedly cold regions, either far north or in high altitudes southward. Two species are recorded from Mexico, *myosota* from Northern Sonora and *bifractus* from Mexico City, the latter being so far the extreme southern record for the genus (old South American and Mexican references always turning out to belong to species of other genera). A few species have been found in the northern (palaearctic) edge of Africa, probably none south of the thirtieth parallel, the latitude of New Orleans.

The Catalogue of Palaearctic Diptera, 1903, lists 119 species in the Old World, almost all from Europe. Siberia has hardly been touched yet, but is undoubtedly very rich in this genus. The present paper recognizes no fewer than 219 species and varieties from North America—a total of nearly 338 species and varieties thus far known (only a few forms are regarded as varieties).

It might be doubted whether such a vast number could properly be classified as belonging to the same genus. The fact is that every attempt at a division has been completely unsuccessful. Loew separated *Hygroceleuthus* on the length of the face, which turns out to be a male character occurring in some species otherwise quite far apart; although Lundbeck retained this in his monograph he admitted that it has slight value. Bigot proposed *Spathichira* for the species with notably enlarged fore or middle tarsi, but the enlargement, besides being purely a male character, is of every degree down to nothing, and in several cases two species can be selected which differ only in very minute characters or none, except that the male of one has enlarged fore tarsi and the other has them plain. Rondani proposed *Ragheneura* for a species with the bend of fourth vein angulated, a very unstable character. Frey in a paper on the European species cited below proposes to divide the genus into four subgenera, as follows:

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[5] Denkschr. Kais. Akad. Wiss., Vienna, vol. 47, 1882, pp. 29, 30, 44, pl. 4, figs. 72–75.

All femora yellow:
  Infraorbital cilia black *Dolichopus* s. str.
  Infraorbital cilia whitish *Eudolichopus* Frey.
Femora more or less black:
  Infraorbital cilia whitish *Leucodolichopus* Frey.
  Infraorbital cilia black *Melanodolichopus* Frey.

He offers these divisions for convenience in grouping the numerous species, conceding that the characters used have slight morphological value. For our fauna, however, the division on the color of the femora is worthless, as we have several types of partial infuscation of these members; the tips of the hind femora may be infuscated, the bases of the front ones only, etc. We have also several species (*crenatus*, etc.) in which the infraorbital cilia are pale in the males, but black in the females. While these characters are used in our tables, they are not generic in any degree. In fact, the more species we know the more homogeneous this remarkable group appears. The specific characters are beautifully distinct in most cases, but mostly sexual. This species are very easy to identify from males and no advantage could result from drawing lines where nature apparently has drawn none.

The present paper is the consummation of work in which I have been interested for 30 years. During the winter of 1889–90, when a student in Professor Cook's laboratory in the Michigan Agricultural College, I decided to take up the Diptera as a specialty. As a beginning I tried my hand with the old Smithsonian monographs of Loew and Osten Sacken, and found that I got along best with the one on the Dolichopodiae, by the aid of which I could determine a fair number of species, especially in *Dolichopus*. This roused my interest in the group, and I began to collect in it actively; so that, when I went to Kansas to study in January, 1893, I took along a considerable named collection and some undescribed species in this genus. Combining this with the University of Kansas collection, I prepared a revision which included 22 new species. In the autumn of 1893 I went to Idaho, and during my residence there of 20 years I had opportunities to collect these beautiful insects in many parts of the West. Thus I accumulated so many species that another revision became desirable; but the undertaking had grown so large that I could not find time to write the descriptions, nor could I make the drawings so necessary to illustrate the many interesting sexual characters involved. At length I hit upon the idea of a joint paper, Mr. Van Duzee to prepare the text except the introduction, and Mr. Cole the figures. Both of these colleagues, so admirably qualified for the respective parts, responded enthusiastically, and I turned over my whole collection, amounting to 139 species, to them. Mr. Van Duzee, moreover, had collected in the family very energetically about Buffalo, New York, and during a trip to the Pacific coast. By further active collecting, by obtaining material from collectors and by visiting the large museums, he succeeded in adding more than 50 per cent to the collection that he received from me. Mr. Cole also obtained new western material.

Both the present work and my revision of 1893 are built upon the foundation of Loew's monograph of 1864. A considerable list of early descriptions which Loew discussed at length and was unable to identify, the types being either destroyed or in European museums, are not herein mentioned at all; they will be found in Loew, and in my Catalogue of North American Diptera of 1905. Loew's types are in the Museum of Comparative Zoology, Cambridge, Massachusetts; they were examined by me in 1901, and in recent years by Mr. Van Duzee. Both of us also studied the types in the American Museum of Natural History, New York City.

As far as possible the type of each new species has been placed in the United States National Museum, while there are comparatively few of the previously known species not found here; making in all almost 200 species represented. Acknowledgment is due to many collectors for their donations of type material, but especially to Mr. Van Duzee himself.

The technical history of the genus will be found in the following bibliography:

BIBLIOGRAPHY OF GENUS DOLICHOPUS LATREILLE.

1796. Latreille, Précis des Caract. Gén., p. 159 (without species.)
1802. Latreille, Hist. nat. des Crust. et Ins., vol. 3, p. 439 (includes *Musca ungulata* Linnaeus and *Musca nobilitata* Linnaeus).
1803. Meigen, Illiger's Mag., vol. 2, p. 272, (*Satyra*, with one species, *Musca ungulata* Linnaeus).
1804. Latreille, Hist. nat. des Crust. et Ins., vol. 14, p. 333 (includes only *Musca ungulata* Linnaeus).
1810. Latreille, Consid. générales, p. 443 (mentions *Musca ungulata* Linnaeus as type of genus).
1823. Fallen, Dolichopodes, p. 7 (wide sense, many species).
1824. Meigen, Syst. Beschr., vol. 4, p. 74 (wide sense).
1842. Staeger, Kröyer naturh., Tidsskrift., 44 pp. (monograph of Danish species, a 4-page addition the next year).
1843. Zetterstedt, Dipt. Scand., vol. 2, p. 493 (wide sense, extensive analysis of species).
1856. Rondani, Prod. Dipt. Ital., vol. 1, p. 144 (*Ragheneura*, type *Doliehopus griseipennis* Stannius).
1861. Loew, Neue Beitr., vol. 8, pp. 1, 5 (limits on the character of bristles on hind basitarsus, and separates *Hygroceleuthus*, new genus (type *latipes*, new species) from this).
1862. Schiner, Fauna Austr., Diptera, vol. 1 (as preceding).
1864. Loew, Mon. N. A. Dipt., vol. 2, pp. 17, 29 (same).
1893. Aldrich, Kans. Univ. Quart., vol. 2, pp. 1 and 23 (*Dolichopus* and *Hygroceleuthus*)
1897. Wheeler, Proc. Cal. Acad. Sci., ser. 3, vol. 2, p. 2 (analysis of *Hygroceleuthus*).
1900. Melander and Brues, Biological Bill., vol. 1, p. 124 (regard *Hygroceleuthus* as a subgenus).
1905. Aldrich, Catalogue of N. A. Dipt., p. 298 (makes it a synonym).
1908. Aldrich, in Williston, Manual of N. A. Dipt., p. 232 (in table).
1912. Lundbeck, Dipt. Danica, vol. 4, pp. 51, 57 (*Hygroceleuthus* and *Dolichopus*, beautifully monographed for Denmark).
1915. Frey, Acta pro Fn. et Fl. Fennica, vol. 40, No. 5, p. 10 (subgenera).

Coquillett, Type-species N. A. Diptera, 1910, p. 535, adopts the assertion of Hendel, Verh. Zool.-Bot. Ges. Wien, 1908, p. 57, and includes as a synonym *Iphis*, Meigen, Nouv. Class., 1800, p. 27. Aside from any other objections to the availability of this name, it applies distinctly to species having an apical arista and hence can not be the same as *Dolichopus*. In any event it would not disturb nomenclature here.

While the present paper was in press, the writer received, on August 30, 1920, a new monograph of the Dolichopodidae of the palaearctic region (Europe, Siberia, etc.), by the well-known dipterist Mr. Theodor Becker, of Liegnitz, Prussia. This is published in three parts in the Nova Acta, Abhandlungen der Leopoldinisch-Carolinischen Deutschen Akademie der Naturforscher, as follows: Band 102, No. 2, 1917; Band 103, No. 3, 1918; and Band 104, No. 2, 1918. The genus *Dolichopus* is treated in the first part, pp. 126–180, and 127 species are recognized, of which 3 are placed in the subgenus *Hydroceleuthus*.

CLASSIFICATION.

By M. C. VAN DUZEE.

TABLE OF THE NORTH AMERICAN SPECIES OF DOLICHOPUS.

MALES (for females, see p. 26).

Division into Groups.

A^1. Femora largely black, at least one pair mainly black.
  B^1. Infra-orbital cilia black.
    C^1. Cilia of calypters pale........*Group A.*
    C^2. Cilia of calypters black........*Group B.*
  B^2. Infra-orbital cilia pale.
    C^1. Middle tibiae black........*Group C.*
    C^2. Middle tibiae yellow........*Group D.*
A^2. Femora yellow, at most the tips of the hind ones black.
  B^1. Infra-orbital cilia black........*Group E.*
  B^2. Infra-orbital cilia pale.
    C^1. Cilia of the calypters pale........*Group F.*
    C^2. Cilia of the calypters black.
      D^1. Hind tibae distinctly black at tip........*Group G.*
      D^2. Hind tibiae not or but slightly infuscated at tip.
        E^1. Hind tarsi wholly black........*Group H.*
        E^2. Hind tarsi distinctly yellow at base........*Group I.*

Group A.

Hind tibiae yellow, with sharply defined black tip; costa without distinct enlargement at tip of first vein........No. 58, *laticornis* Loew.
Hind tibiae largely infuscated, the black not sharply defined; costa with a small but distinct enlargement at tip of first vein........No. 59, *nodipennis*, new species.

Group B.

1. Anterior basitarsi with a row of erect bristles below (Indiana).
No. 49, *retinens*, new species.
  Anterior tarsi without such bristles........2.
2. Middle femora at least half yellow, or yellowish........3.
  None of the femora with more than apical third yellow........12.
3. Middle femora black at base, gradually becoming yellow, but largely blackish; lamellae small and infuscated........4.
  Middle femora wholly yellow, or with the black more distinctly limited........5.
4. Third and fourth veins of the wing quite close together at their tips, approaching each other beyond the bend in fourth (Wisconsin).
No. 57, *umbrosus*, new species.
  Third and fourth veins well separated at their tips, nearly parallel beyond the bend (New York)........No. 55, *adultus*, new species.

5. Hind femora yellow except dorsal and part of ventral edge (Idaho). No. 63, *opportunus*, new species.

Hind femora black, the tip may be yellow .... 6.

6. Fore femora mostly yellow (E. States; Canada) ... No. 67, *flavilacertus*, new species.

Fore femora largely black, at least black at base for nearly half their length .. 7.

7. Fourth joint of middle tarsi distinctly compressed (New York; Illinois). No. 54, *remus*, new species.

All tarsi plain .... 8.

8. Hind tibiae wholly black (New Jersey) .... No. 26, *demissus*, new species.

Hind tibiae with basal portion yellow .... 9.

9. Middle femora distinctly blackened at base .... 11.

Middle femora not, or but slightly infuscated at base .... 10.

10. Face ochraceous (Greenland; Labrador) .... No. 52, *groenlandicus* Zetterstedt.

Face silvery (Wisconsin; New York) .... No. 53, *incongruus* Wheeler.

11. Middle and hind femora each with two preapical bristles; third antennal joint about one and a half times as long as wide (Idaho). No. 38, *bisetosus*, new species.

Middle and hind femora each with one preapical bristle; third antennal joint two or three times as long as wide (New York; Massachusetts). No. 55, *adultus*, new series.

12. Anterior tibiae black or blackish .... 13.

Anterior tibiae yellow or yellowish brown .... 20.

13. Last joint of fore tarsi compressed .... 14.

Fore tarsi plain .... 16.

14. Fifth joint of fore tarsi obcordate, second and third joints usually yellowish (Colorado; New Mexico) .... No. 19, *manicula*, new species.

Fore tarsi wholly black, fifth joint not notched at tip .... 15.

15. First antennal joint yellow below; fifth joint of fore tarsi cut off rather straight at tip (California) .... No. 21, *acricola*, new species.

Antennae wholly black; fifth joint of fore tarsi extended a little at upper edge (California) .... No. 20, *corax* Osten Sacken.

16. Middle basitarsi wholly black .... 18.

Middle basitarsi mostly white .... 17.

17. Wings with a conspicuous blackish spot near the tip (Washington). No. 23, *argentipes*, new species.

Wings without any trace of such a spot (Alaska; Labrador; North Europe). No. 22, *stenhammari* Zetterstedt.

18. Hind femora ciliated on lower inner edge (California; Oregon), No. 17, *paluster* Melander and Brues.

Hind femora without cilia .... 19.

19. Lamellae of the hypopygium blackish (Colorado) .. No. 3, *barbaricus*, new species

Lamellae whitish with a black border (Washington; British Columbia). No. 2, *monticola*, new species.

20. Hind tibiae distinctly yellow for more than one-third their length, at least on one side .... 21.

Hind tibiae infuscated, at most a little yellow at base .... 27.

21. Third antennal joint about three times as long as wide; arista subapical; lamellae of hypopygium blackish (Illinois) .... No. 39, *intentus* Melander and Brues.

Third antennal joint not over one and a half times as long as wide; arista dorsal; lamellae whitish .... 22.

22. Costa with a long, tapering enlargement at tip of first vein (Eastern States). No. 29, *gratus* Loew.

Costa without an enlargement at tip of first vein .... 23.

23. Hind femora ciliated below .... 24.

Hind femora without cilia .... 26.

24. Cilia of hind femora as long as the width of the femora (Labrador).
No. 43, *packardi*, new species.
Cilia of hind femora not much over half as long as the width of the femora... 25.
25. Lamellae of hypopygium with a large, almost angulated, upward projection at apex (New York) .... No. 41, *aequalis*, new species.
Lamellae somewhat triangular, with a very small projection above at apex (Louisiana; Indiana) .... No. 46, *alacer*, new species.
26. Head without any yellow bristles below near the proboscis; wings with a brown cloud (Nevada).............................. No. 36, *nubifer*, new species.
Head with two or three yellow bristles below near the proboscis; wings without a brown cloud (New York) .... No. 41, *aequalis*, new species.
27. Lamellae of the hypopygium small, wholly black (Idaho).
No. 25, *beatus*, new species.
Lamellae of normal size, not wholly black.............................. 28.
28. Wings grayish hyaline (Eastern States)............... No. 30, *calcaratus* Aldrich.
Wings more or less clouded with brown .... 29.
29. Wings uniformly infuscated (New Jersey; Maryland)..No. 32, *johnsonii* Aldrich.
Wings with a large conspicuous cloud beyond the middle (Colorado).
No. 47, *partitus* Melander and Brues.

Group C.

1. Cilia of the calypters pale.............................. 2.
Cilia of the calypters black.............................. 6.
2. Costa considerably enlarged before the tip of first vein (Montana).
No. 7, *viridis*, new species.
Costa not or but little enlarged at tip of first vein.............................. 3.
3. Hypopygial lamellae blackish (Colorado; Idaho; Washington; Nevada).
No. 9, *nigricauda*, new species.
Hypopygial lamellae whitish with a black border.............................. 4.
4. All joints of middle tarsi slightly compressed (Idaho; Nevada; Utah; California).
No. 6, *squamosus*, new species.
All joints of middle tarsi normal.............................. 5.
5. Lamellae of the hypopygium somewhat quadrangular in outline (Colorado).
No. 15, *enigma* Melander and Brues.
Lamellae somewhat triangular in outline (California)..No. 5, *formosus*, new species.
6. Fifth joint of fore tarsi enlarged; second and third joints yellowish; hind femora ciliated (Hudson Bay Territory).................. No. 18, *tetricus* Loew.
Fifth joint of fore tarsi plain .... 7.
7. Hind femora ciliated on lower inner edge.............................. 8.
Hind femora without cilia on the lower edge.............................. 12.
8. Hypopygial lamellae blackish (Eastern States) .... No. 14, *detersus* Loew.
Hypopygial lamellae whitish with a black border.............................. 9.
9. Fore tarsi over one and one-half times as long as their tibiae (Kansas).
No. 13, *kansensis* Aldrich.
Fore tarsi not over one and one-fourth times as long as their tibiae........... 10.
10. Middle and hind femora each with two preapical bristles, placed one before the other; face brownish (Colorado; Idaho; Nevada).
No. 16, *adaequatus*, new species.
Middle and hind femora each with only one preapical bristle............... 11.
11. Face rather wide; costa with a small knotlike enlargement at tip of first vein (Colorado).............................. No. 15, *enigma* Melander and Brues.
Face narrow; costa without any enlargement at the tip of first vein (western).
No. 11, *myosota* Osten Sacken.

12. Hind basitarsi with ten or twelve large bristles (California; Colorado). No. 12 *multisetosus*, new species.
    Hind basitarsi with only two to six large bristles .... 13.
13. Hypopygial lamellae brown or brownish .... 14.
    Hypopygial lamellae white with a black border .... 15.
14. Face narrow, silvery white (Illinois) ...... No. 1, *calainus* Melander and Brues.
    Face very wide, whitish; hypopygium and their lamellae rather small (Idaho). No. 4, *sordidatus*, new species.
15. Lamellae of the hypopygium acutely pointed at tip (Eastern States). No. 24, *acuminatus* Loew.
    Lamellae not acutely pointed at tip .... 16.
16. Hypopygial lamellae large, rather subquadrate in outline (Colorado). No. 15, *enigma* Melander and Brues.
    Hypopygial lamellae shaped otherwise .... 17.
17. Lamellae of the hypopygium oval .... 19.
    Hypopygial lamellae somwehat triangular in outline .... 18.
18. Lamellae small and cut off rather straight at apex; fore tarsi wholly black (western) .... No. 11, *myosota* Osten Sacken.
    Lamellae of moderate size, more rounded at apex .... 20.
19. Hypopygial lamellae not at all jagged at apex (California). No. 5, *formosus*, new species.
    Lamellae jagged on apical margin .... 20.
20. Fore tarsi scarcely as long as their tibae, slightly yellow at base; second, third, and fourth jŏints of nearly equal length (New York; Wisconsin; Idaho). No. 10, *ovatus* Loew.
    Fore tarsi a little longer than their tibae, wholly black; second joint longer than third, and more than twice as long as fourth (Idaho). No. 8, *nigrimanus*, new species.

Group D.

1. Costa greatly enlarged before the tip of first vein; middle tarsi very long and slender, each joint distinctly enlarged at tip; face reaching below the eyes (Nevada; Utah) .... No. 33, *appendiculatus*, new species.
   Not with the above combination of characters .... 2.
2. Cilia of the calypters pale .... 3.
   Cilia of the calypters black .... 10.
3. Wings marked with black or brownish .... 4.
   Wings grayish hyaline, or only slightly clouded along the front 5
4. Wings clouded with brown in front and along the veins; last three joints of hind tarsi fringed above (Puget Sound; N. Europe) .. No. 50, *remipes* Wahlberg.
   Apex of the wing with a conspicuous black or brown spot (Eastern States). No. 48, *setifer* Loew.
5. Front covered with white pollen, which, viewed in certain directions, conceals the ground color (Massachusetts) .. No. 28, *agronomus* Melander and Brues.
   Front metallic, more or less shining .... 6.
6. First antennal joint unusually long and rather slender (Alaska). No. 64, *humilis*, new species.
   First antennal joint normal .... 7.
7. Hind tibiae distinctly thickened, mostly black .... 8.
   Hind tibiae rather slender, yellow with black tips .... 9.
8. Middle and hind femora black at base, mostly yellow, the latter without cilia below, but with a fringe of long hairs on upper inner edge (Washington; California) .... No. 56, *californicus*, new species.

All femora black, slightly yellowish at extreme base and tip; posterior pair ciliated below with long white hairs, without long hairs above (Washington). No. 31, *melanderi*, new species.

9. Fore tarsi normal; third antennal joint nearly three times as long as wide; arista very short, subapical (Indiana)......No. 40, *angusticornis*, new species.

Fore tarsi with its joints narrowed at base; third antennal joint rather small, normal (Washington).........................No. 42, *litoralis*, new species.

10. Middle femora mostly yellow.................................... 11.

Middle femora largely or wholly black.............................. 17.

11. Hind femora black.. 12.

Hind femora mostly yellow.. 13.

12. Last two joints of middle tarsi compressed and fringed (Alaska; Idaho; New Mexico; Utah).................................No. 66, *varipes* Coquillett.

All tarsi plain (Idaho)............................No. 51, *sedulus*, new species.

13. Hind femora wholly yellow (Colorado; Idaho; Nevada; Utah). No. 62, *amnicola* Melander and Brues.

Hind femora black at tip, at least above; middle ones with a black streak above or below.. 14.

14. Hind femora black above on whole upper edge........................ 15.

Hind femora black at tip (Labrador)...............No. 61, *bryanti*, new species.

15. Costa with a knotlike enlargement at tip of first vein (Alaska). No. 60, *solidus*, new species.

Costa not or scarcely at all enlarged at tip of first vein......... 16.

16. Hypopygium small, its lamellae yellowish; posterior femora without cilia below (New Hampshire)........................No. 65, *brevicauda*, new species.

Hypopygium normal in size, its lamellae whitish; hind femora with a few white hairs below near the tip (New Hampshire; Colorado; Alaska) No. 44, *xanthocnemus* Loew.

17. Middle femora infuscated at base, gradually becoming yellow toward their apex... 18.

Middle femora black, sometimes yellow at tip........................ 22.

18. First antennal joint long and slender (Alaska)....No. 64, *humilis*, new species.

First antennal joint short as usual................................ 19.

19. Hypopygium short, its lamellae yellowish (New Hampshire) No. 65, *brevicauda*, new species.

Hypopygium of normal size, its lamellae whitish..................... 20.

20. Hind femora ciliated below near the tip with a few white hairs...... 21.

Hind femora without cilia below (Idaho)..........No. 51, *sedulus*, new species.

21. Cilia of the calypters black (New Hampshire; Colorado; Alaska). No. 44, *xanthocnemus*, new species.

Cilia of the calypters yellowish (Washington).....No. 42, *litoralis*, new species.

22. Hind femora ciliated with long hairs below......................... 23.

Hind femora without cilia below, or with the cilia very short....... 28.

23. Hind femora ciliated with long black hairs......................... 24.

Hind femora ciliated with pale hairs................................ 25.

24. Wings with a conspicuous brown cloud in front, opposite the cross vein (Colorado.) No. 47, *partitus* Melander and Brues.

Wings without a brown cloud (eastern)............No. 45, *albiciliatus* Loew.

25. Hind tibiae swollen, subfusiform, mostly black (South Dakota; Colorado; Idaho; Wyoming)..........................No. 27, *conspicuus*, new species.

Hind tibiae slightly enlarged at tip, yellow with sharply defined black tips.. 26.

26. Hind femora ciliated with a few long white hairs below; fore tarsi plain; costa with a small knot-like enlargement at tip of first vein (New Hampshire; Colorado; Alaska).........................No. 44, *xanthocnemus*, new species.

Hind femora with short cilia below.................................. 27.

27. Hind tibiae yellow with black tips (New York)...No. 41, *aequalis*, new species.

Hind tibiae mostly black (New York)............No. 26½, *burnesi*, new species.

28. Distance between the third and fourth veins at tips only a little more than half as great as at the bend in the last section of fourth vein (Oregon; Washington) No. 35, *convergens* Aldrich.

The third and fourth veins approach each other but little beyond the bend of fourth vein.................... 29.

29. Hypopygial lamellae with very dense black hair on apical portion (Eastern Canada; North Dakota)......................No. 37, *barbicauda*, new species.

Lamellae with only the usual fringe of bristles and hairs.................. 30.

30. Costa distinctly enlarged at tip of first vein, gradually tapering to its tip (Saskatchewan)..............................No. 34, *fumosus*, new species.

Costa with a very small knotlike enlargement at tip of first vein (New York). No. 26½, *burnesi*, new species.

Costa not distinctly enlarged at tip of first vein; only one or two of the lower orbital cilia yellow; fore tarsi slightly compressed at tip (New York). No. 41, *aequalis*, new species.

Group E.

1. Arista ending in a lamella (New Hampshire).............No. 88, *dorycerus* Loew.

Arista plain.................... 2.

2. Anterior tarsi plain.................... 3

Fore tarsi ornamented.................... 7.

3. Anterior tibiae with a fringe of very long black hair on the front surface (Nevada). No. 84, *barbipes*, new species.

Anterior tibiae without such hair.................... 4.

4. Wings with a conspicuous brown cloud on costal margin near the apex Massa(chusetts)..............................No. 87, *ornatipennis*, new species.

Wings with a brown cloud.................... 5.

5. First two joints of the antennae yellow below, the first large (Vancouver Island; Puget Sound).................................No. 161, *bruesi*, new name.

Antennae wholly black, first joint small as usual.......................... 6.

6. Middle and hind femora ciliated below (Wisconsin; Europe) No. 83, *ungulatus* Linnaeus.

Femora without cilia below (Alaska, Europe).............No. 68, *rupestris* Hall.

7. Hind femora without cilia below (Northwest Territory)..No. 86, *daysyops* Malloch.

Hind femora with cilia below.................... 8.

8. Cilia of hind femora yellow; fifth joint of fore tarsi much longer than fourth (Hudson Bay Territory; Europe).................No. 85, *brevipennis* Meigen.

Cilia of hind femora black; fourth and fifth joints of fore tarsi nearly equal in length (Eastern States)........................No. 82, *pachycnemus* Loew.

Group F.

1. Arista enlarged at tip (Labrador)..................No. 116, *pilatus*, new species.

Arista plain.................... 2.

2. Antennae black, the first and second joints may be yellow below........... 3.

First antennal joint wholly yellow.................... 31.

3. Fore coxae blackened at base for more than half their length, at least on outer surface.................... 4.

Fore coxae yellow, sometimes with a black or green stripe or spot on outer surface.................... 5.

4. Hind femora blackened at tip; fore tarsi plain (Puget Sound). No. 69, *fucatus*, new species.

Hind femora wholly yellow; fore tarsi ornamented (widespread). No. 138, *longimanus* Loew.

5. Hind tibiae blackened at tip.. 6.
Hind tibiae wholly yellow or only slightly infuscated at tip.................. 15.

6. Last joint of fore tarsi more or less compressed.............................. 7.
Last joint of fore tarsi plain.. 9.

7. First four joints of fore tarsi plain, fifth a very little compressed (Regina; Canada.) No. 94, *canadensis*, new species.
Fourth and fifth joints of fore tarsi distinctly compressed...................... 8.

8. Hind femora with long yellow cilia below (Alaska; Europe). No. 119, *plumitarsis* Fallen.
Hind femora without cilia (Eastern States)............No. 115, *albicoxa* Aldrich.

9. Hind femora ciliated with long yellow hairs below............................. 10.
Hind femora without cilia below.. 11.

10. Costa with a small knot-like enlargment at junction of first vein (Ontario). No. 104, *flaviciliatus*, new species.
Costa a little enlarged at junction of first vein, gradually tapering to its tip (Maine; New York; Labrador)..........................No. 107, *serratus*, new species.

11. Last four joints of fore tarsi of nearly equal length, each a little narrowed at base (widespread)....................................No. 92, *indigena*, new species.
Second joint of fore tarsi distinctly longer than third; last four joints cylindrical, not narrowed at base.. 12.

12. Third antennal joint long, acutely pointed, arista nearly apical; hypopygial lamellae large (Massachusetts)....................No. 95, *acutus*, new species.
Third antennal joint obtusely pointed or rounded at tip, arista inserted near the middle of the third joint; lamellae of moderate size, not large..... 13.

13. Hind femora with a lower row of little black hairs on inner side, so that when seen from below there are two rows of little black hairs with a glabrous space between them on lower edge (eastern)..............No. 91, *brevimanus* Loew.
Hind femora with the lower row of little hairs on inner surface yellow and very delicate.. 14.

14. Fifth joint of fore tarsi yellowish; the yellow hairs on lower inner edge of hind femora nearly one fifth as long as the width of the femora; costa without an enlargement at tip of first vein; third antennal joint twice as long as wide..No. 89, *socius* Loew.
Fifth joint of fore tarsi black, not at all paler than those preceding it; hairs on lower inner edge of hind femora very short; third antennal joint one and a fourth times as long as wide; costa with a small but distinct knot-like enlargement at tip of first vein (eastern).No. 90, *socius*, var. *gladius*, new variety.

15. Hind tarsi entirely black or very nearly so.................................. 16.
Hind tarsi yellow at base.. 23.

16. Hind femora without cilia below.. 17.
Hind femora ciliated on lower inner edge.. 18.

17. Fore tarsi twice as long as their tibiae, with last joint much compressed (Hudson Bay Territory)..No. 143, *nudus* Loew.
Fore tarsi one and one-fourth times as long as their tibiae, their last joint only slightly widened (Regina; Canada).......No. 94, *canadensis*, new species.

18. None of the joints of fore tarsi compressed, but the last four joints narrowed at base (Maine; New York; Labrador)...........No. 107, *serratus*, new species.
Last joint of fore tarsi much compressed, lamelliform......................... 19.

19. Enlarged last joint of fore tarsi with a white reflection on the outside (eastern)..No. 188, *palaestricus* Loew.
The same without a white reflection.. 20.

20. Fore tarsi twice as long as their tibiae... 21.
Fore tarsi one and a half times as long as their tibiae........................ 22.

21. Antennae wholly black; cilia of hind femora rather scattering, extending nearly their whole length (Hudson Bay Territory)........No. 139. *subciliatus* Loew.
First antennal joint reddish or yellowish below; cilia of hind femora dense and confined to a short space on lower inner edge (Colorado).
No. 140, *amplipennis*, new species.

22. Costa with a small knot-like enlargement at tip of first vein (eastern).
No. 142, *splendidulus* Loew.
Costa with an elongated enlargement at tip of first vein (Eastern States).
No. 141, *splendidus* Loew.

23. Fore tarsi with the fifth joint compressed.. 24.
Fore tarsi plain.. 29.

24. Fore tarsi dark yellow with fifth joint only a little compressed (Newfoundland)....................................No. 183, *bolsteri*, new species.
Fourth and fifth joints of fore tarsi much compressed, fourth white, fifth black.. 25.

25. Fourth joint of fore tarsi distinctly less than half as long as fifth; hind tibiae considerably thickened in the middle (Eastern States).No. 189, *batillifer* Loew.
Fourth joint of fore tarsi three fourths or more than three fourths as long as fifth.. 26.

26. Third joint of fore tarsi a little compressed, white; hind tibiae but little thickened (eastern)..............................No. 187, *dakotensis* Aldrich.
Third joint of fore tarsi normal or very nearly so, yellow.................. 27.

27. Hind femora not ciliated (eastern)........................No. 184, *tonsus* Loew.
Hind femora ciliated on lower inner edge................................ 28.

28. Third and fourth joints of fore tarsi of equal length, fifth a little shorter, sometimes the last three joints are of nearly equal length (Eastern States).
No. 185, *eudactylus* Loew.
Third and fifth joints of equal length, fourth a little shorter (Indiana; Ontario).
No. 186, *versutus*, new species.

29. Second abdominal segment with a tuft of long yellow hairs on each side and a smaller and shorter one on each side of third segment (California; Utah; New Mexico)....................................No. 158, *afflictus* Osten Sacken
Abdomen without such hair.. 30.

30. First antennal joint long and thick, densely hairy on the outer side (Western States)......................................No. 159, *crenatus* Osten Sacken.
First antennal joint normal; enlargement of the costa at tip of first vein as long as the cross-vein (Idaho; California; Oregon).No. 163, *idahoensis*, new species).

31. Last joint of fore tarsi compressed (Illinois; New York; Wisconsin).
No. 190, *tener* Loew.
Fore tarsi plain.. 32.

32. Hind femora without cilia below (Colorado)......No. 178, *celeripes*, new species.
Hind femora ciliated on lower inner edge................................ 33.

33. The longest hairs that form the cilia on the hind femora not more then three-fourths as long as the width of the femora; hind basitarsi mostly yellow (Virginia).
No. 136, *greenei*, new species.
The longest cilia on hind femora fully as long or longer than the width of the femora; hind basitarsi usually wholly black.............................. 34.

34. Fore tarsi with only the fifth joint black (widespread).No. 135, *luteipennis* Loew.
Fore tarsi blackened from the tip of the first joint (widespread).
No. 133, *variabilis* Loew.

Group G.

1. First antennal joint black, at least on upper edge............................ 2.
First antennal joint wholly yellow.. 43.

2. Hind femora blackened at tip, at least on upper surface........ 3.
Hind femora not at all blackened at tip........ 14.

3. Middle tibiae with very long slender bristles, their basitarsi with a row of very long hairs; fore tarsi compressed (eastern)........No. 79, *comatus* Loew.
Middle tibiae and basitarsi without unusually long bristles and hairs........ 4.

4. Fore tarsi with one or more joints compressed and dilated........ 5.
Fore tarsi plain........ 6.

5. Hind femora ciliated; fore tarsi with the fifth joint only slightly dilated, their basitarsi scarcely as long as second and third taken together (Alaska).
No. 81, *barycnemus* Coquillett.
Hind femora without cilia; fore tarsi with the fifth joint conspicuously dilated, their basitarsi nearly as long as the remaining four joints taken together (Massachusetts; Maine; New Jersey)........No. 80, *virga* Coquillett.

6. Fore coxae yellow, sometimes considerably blackened at base on outer surface. 7.
Fore coxae blackish almost to their tips........ 11.

7. Hind femora ciliated with long hairs on lower inner edge........ 8.
Hind femora without cilia........ 9.

8. Hind femora with one preapical bristle, their cilia long and delicate; anal angle of wing nearly obsolete (New Hampshire)........No. 77, *obsoletus*, new species.
Hind femora with two or three preapical bristles, their cilia stout, scarcely as long as the width of the femora; anal angle of wing prominent (Massachusetts; New York; New Brunswick)........No. 78, *trisetosus* new species.

9. Face ochraceous or grayish yellow; hypopygial lamellae about as long as wide (Wisconsin; Michigan)........No. 70, *apheles* Melander and Brues.
Face silvery white........ 10.

10. Hypopygial lamellae triangular with a sharp point at one corner, very narrowly bordered with black; wings wholly grayish (Maine; Newfoundland).
No. 75, *genualis*, new species.
Hypopygial lamellae oval, a little longer than wide, with black border; wings tinged with brown in front of third vein (New York; Illinois; Ontario.)
No. 72, *discolor*, new species.

11. Wings more or less clouded with brown........ 12.
Wings wholly grayish, or nearly so........ 13.

12. Apical portion of wing with a conspicuous blackish spot; fore femora not darker on upper surface (Illinois)........No. 76, *praeustus* Loew.
Costal margin of wing brownish, darker in front of second vein; fore femora brownish on upper edge (Washington)........No. 71, *affluens*, new species.

13. Bend in last section of fourth vein small but not unusually so, third vein bent backward at tip (Eastern States)........No. 73, *sincerus* Melander.
Last section of fourth vein only slightly bent, third vein only a very little bent back at tip (Eastern States)....No. 74, *sincerus*, var. *subdirectus*, new variety.

14. Front purple, blue or violet........ 15.
Front green or bronze colored........ 19.

15. Last joint of fore tarsi compressed and dilated (Massachusetts; New Hampshire; New York)........No. 117, *porphyrops*, new species.
Fore tarsi plain........ 16.

16. Last section of fourth vein forked (widespread)........No. 100, *ramifer* Loew.
Last section of fourth vein only bent, without a stump........ 17.

17. Hind femora ciliate with very long pale hairs (Eastern States). No. 106, *setosus* Loew.
Hind femora ciliated with black hairs........ 18.

18. Antennae wholly black (widespread)...No. 108, *renidescens* Melander and Brues.
First two antennal joints yellow with a black line above (Eastern States).
No. 113, *marginatus* Aldrich.

19. Hypopygium short, with small yellowish lamellæ.......................... 20.
Hypopygium of normal size.. 21.
20. Antennae wholly black (New York).............No. 98, *cuniculus*, new species.
First antennal joint conspicuously yellow below (Maine; Labrador). No. 97, *abbreviatus*, new species.
21. Hind femora ciliated on lower inner edge.............................. 22.
Hind femora without cilia.. 30.
22. Fore tarsi ornamented.. 23.
Fore tarsi plain... 25.
23. Fore coxae yellow (Alaska; Europe)................No. 119, *plumitarsis* Fallen.
Fore coxae black... 24.
24. Fifth joint of fore tarsi notched at tip so as to form two nearly equal lobes; first three joints slender, yellow (western)...............No. 121, *obcordatus* Aldrich.
Fifth joint of fore tarsi divided into two unequal lobes, the upper one much the largest; first three joints slender, first yellow, other two white, all with black tips (California)................................No. 120, *pollex* Osten Sacken.
25. Antennae wholly black; face yellowish.................................. 26.
First antennal joint distinctly yellow below.......................... 27.
26. Fore coxae with conspicuous black hairs on the anterior surface; third antennal joint a little longer than wide, rather rounded at tip (Ontario; Newfoundland; Massachusetts).................................No. 102, *melanocerus* Loew.
Fore coxae with delicate yellow hairs on anterior surface; third antennal joint twice as long as wide, pointed at tip (Massachusetts; Maryland; Virginia; New York; Ontario)...............No. 103, *pantomimus* Melander and Brues.
27. Cilia of hind femora short, about three-fourths as long as width of femora (New York; Indiana; Ontario)..........................No. 101, *incisuralis* Loew.
Cilia of hind femora as long or longer than the width of the femora............ 28.
28. Costa with a knotlike enlargement at junction of first vein; hypopygial lamellae about as long as wide, somewhat orbicular (Eastern States). No. 106, *setosus* Loew.
Costa enlarged at junction of first vein, gradually tapering to its tip; lamellae distinctly longer than wide.. 29.
29. Middle basitarsi with a large bristle above; hypopygial lamellae oval, rounded at tip; fore tarsi with the joints normal (Illinois)..No. 105, *decorus*, new species.
Middle basitarsi without a bristle above; lamellae subquadrate, truncate at tip; second, third, and fourth joints of fore tarsi narrowed at base (Maine). No. 107, *serratus*, new species.
30. Third antennal joint twice as long as wide (Ontario)..No. 191, *sicarius*, new species.
Third antennal joint not over one and one-half times as long as wide......... 31.
31. Fore tarsi ornamented... 32.
Fore tarsi plain.. 35.
32. Fifth joint of fore tarsi scarcely compressed, small (Ontario). No. 94, *canadensis*, new species.
Last joint of fore tarsi distinctly compressed and dilated.................. 33.
33. Third joint of fore tarsi half as long as first (Vancouver Island; Idaho; Washington).................................No. 122, *pernix* Melander and Brucs.
Third joint of fore tarsi one-fourth or less than one-fourth as long as first..... 34.
34. Fourth and fifth joints forming an oval tip to the fore tarsi (Eastern States)...... No. 80, *virga* Coquillett.
The oval tip to fore tarsi formed by the fifth joint only, which is equal to the third in length (California)....................No. 149, *speciosus*, new species.
35. Fore coxae partly or wholly black... 36.
Fore coxae wholly yellow, or with a small blackish spot at base on outer surface.. 38.

36. Anterior coxae and basal part of fore femora black (western), No. 62, *amnicola* Melander and Brues.

Fore coxae yellow with a large black or green stripe on outer posterior edge, which is wide above and pointed below.............. 37.

37. Last four joints of middle tarsi a little compressed (Washington). No. 182, *aldrichii* Wheeler.

All tarsi normal (widespread)..............No. 165, *penicillatus*, new name.

38. Middle tarsi wholly black (widespread)..............No. 129, *dasypodus* Coquillett.

Middle basitarsi largely yellow.............. 39.

39. Hind basitarsi yellow with black tip; hind margin of wing notched at end of fifth vein (North Carolina)..............No. 175, *carolinensis*, new species.

Hind tarsi wholly black, at most slightly yellowish at extreme base.............. 40.

40. Fore tarsi black from the tip of the first joint (Illinois; Connecticut; New York). No. 96, *defectus*, new species.

Fore tarsi with the first two, or last joint yellow, sometimes wholly yellow... 41.

41. Arista nearly apical; hypopygial lamellae large, twice as long as wide (Massachusetts)..............No. 95, *acutus*, new species.

Arista inserted near the middle of third antennal joint; lamellae moderately small, one and one-half times as long as wide.............. 42.

42. Hypopygial lamellae rather small, with about six rather stout hairs on upper edge; fore tarsi wholly yellow (New York; Vermont)...No. 93, *idoneus*, new species.

Hypopygial lamellae moderately large, without hairs on upper edge, except those on rounded apical edge; last three joints of fore tarsi black (Ontario; Regina; Wyoming)..............No. 94, *canadensis*, new species.

43. Arista enlarged at tip; wing with a lobe at tip of sixth vein.............. 44.

Arista plain.............. 45.

44. Hypopygial lamellae large; hind margin of wing with a deep sinus before the lobe (Washington)..............No. 109, *hastatus* Loew.

Hypopygial lamellae small; hind margin of the wing normal, except for the lobe at anal angle (California)..............No. 110, *comptus*, new species.

45. Fore tarsi ornamented.............. 46.

Fore tarsi plain.............. 52.

46. Front and dorsum of thorax thickly pollinose; bend in last section of fourth vein furnished with a stump (widespread)..............No. 126, *bifractus* Loew.

Front shining; last section of fourth vein only bent, without a stump.............. 47.

47. Third antennal joint wholly black.............. 48.

Third antennal joint largely yellow.............. 50.

48. Fifth joint of fore tarsi large, nearly orbicular, twice as long as third and fourth taken together (eastern)..............No. 125, *flagellitenens* Wheeler.

Fifth joint of fore tarsi moderately large, as long or a little longer than third and fourth joints taken together.............. 49.

49. Fore tarsi infuscated almost to their base, second joint about half as long as first, third and fourth joints together nearly as long as fifth; hind tibiae narrowly but sharply black at tip (Colorado; New Mexico)..No. 149, *speciosus*, new species.

Fore tarsi with the first two joints yellow, second three-fourths as long as first, third and fourth taken together three-fourths as long as fifth; hind tibiae blackened for more than one-third their length, the black shading into the yellow (Montana; Colorado; Utah)..............No. 123, *blandus*, new species.

50. Front green; hind tibiae black at tip, gradually becoming yellow, still largely infuscated; fore tarsi with the fifth joint scarcely dilated (New York). No. 112, *abrasus*, new species.

Front violet; fore tarsi with fifth joint considerably dilated; hind tibiae narrowly but sharply black at tip, at least on inner side.............. 51.

51. Hind tibiae scarcely blackened on outer side, but distinctly so on inner surface; fore tibiae slightly infuscated at tip, and with a few flattened bristles (eastern)........No. 127, *pugil* Loew.

Hind tibiae sharply black at tip for one-fifth their length or more; fore tibiae wholly yellow and with their hairs and bristles normal (Eastern States). No. 124, *vigilans* Aldrich.

52. Middle basitarsi laterally fringed (widespread)........No. 128, *plumipes* Scopoli.

Middle basitarsi plain........53.

53. Hind femora ciliated below with long black hairs; front usually blue or violet.. 54.

Hind femora without cilia below; front green........55.

54. Last section of fourth vein bent at a right angle, and with a stump-vein at posterior bend; hypopygial lamellae somewhat triangular, fringed with rather short hairs (Eastern States, from New York to Florida; Kansas). No. 114, *reflectus* Aldrich.

Last section of fourth vein moderately bent, without a stump-vein; lamellae somewhat orbicular, fringed with very long hairs (eastern). No. 113, *marginatus* Aldrich.

55. Antennae yellow, blackened at tip of third joint; hind tibiae mostly blackish, the black shading into yellow at their base (New York). No. 112, *abrasus*, new species.

Third antennal joint wholly black; hind tibiae only slightly infuscated at tip (New Mexico)........No. 111, *dorsalis*, new species.

Group II.

1. First antennal joint wholly yellow........2.

Antennae black, first joint sometimes yellow below, at least narrowly so.... 24.

2. Arista enlarged at tip; wings with a conspicuous lobe at tip of sixth vein.... 3.

Arista plain........4.

3. Hypopygial lamellae large; hind margin of wing with a deep sinus before the lobe (Washington)........No. 109, *hastatus* Loew.

Lamellae small; hind margin of wing nearly normal, except for the lobe at tip of sixth vein (California)........No. 110, *comptus*, new species.

4. Fore tarsi ornamented........5.

Fore tarsi plain........18.

5. Hind femora ciliated below; fore tibiae slightly enlarged and a little blackened at tip (eastern)........No. 127, *pugil* Loew.

Not with the above combination of characters........6.

6. Hind coxae yellow; front and dorsum of thorax pollinose, nearly opaque (widespread; Mexico)........No. 126, *bifractus* Loew.

Hind coxae more or less black at base; front and dorsum of thorax shining... 7.

7. Wings with a projecting lobe at tip of sixth vein........8.

Wings without or with scarcely a trace of such a lobe........12.

8. Wings with the lobe at tip of sixth vein very prominent........9.

Lobe at tip of sixth vein small........10.

9. Hypopygial lamellae with the apical margin evenly rounded; costa not enlarged at junction of first vein (widespread)........No. 155, *lobatus* Loew.

Apical margin of lamellae emarginate; costa enlarged at junction of first vein, tapering to the tip (widespread)........No. 156, *omnivagus*, new species.

10. First and second joints of fore tarsi of about equal length (Colorado; Wyoming). No. 152, *æratus*, new species.

Second joint of fore tarsi distinctly shorter than first........11.

11. Third joint of fore tarsi more than half as long as second (Colorado). No. 154, *coloradensis* Aldrich

Third joint of fore tarsi just about half as long as second (California). No. 151, *completus*, new species.

Third joint of fore tarsi one-third as long as second (Wisconsin; Colorado). No. 157, *amphericus* Melander and Brues.

12. Second joint of fore tarsi shorter, or at most scarcely longer than the two following joints taken together.. 13.

Second joint of fore tarsi distinctly longer than the two following joints taken together.. 15.

13. Second antennal joint yellow (Washington)..........No. 198, *plumosus* Aldrich.

Second antennal joint black.. 14.

14. Third joint of fore tarsi yellow, fifth joint nearly as wide as long (Colorado; Idaho; Washington)..........................No. 153, *sufflavus*, new species.

Third joint of fore tarsi blackish, fifth about half as wide as long (Colorado; New Mexico)..................................No. 149, *speciosus*, new species

15. Third joint of fore tarsi infuscated at apex (Wisconsin). No. 157, *amphericus* Melander and Brues.

Third joint of fore tarsi wholly yellow.. 16.

16. Third joint of fore tarsi more than half as long as second (Colorado). No. 154, *coloradensis* Aldrich.

Third joint of fore tarsi scarcely half as long as second.................... 17.

17. Second joint of fore tarsi two thirds as long as first (Colorado; Wisconsin). No. 157, *amphericus* Melander and Brues.

Second joint of fore tarsi scarcely half as long as first (Idaho; Washington). No. 153, *sufflavus*, new species.

Second joint of fore tarsi nearly or quite as long as first (Colorado; Wyoming). No. 152, *æratus*, new species.

18. Middle basitarsi fringed with black hairs on both sides.................... 19.

Middle basitarsi plain, not fringed.. 20.

19. Middle tibiae nearly twice as long as their femora (Massachusetts; New Hampshire)..............................No. 137, *wheelerii* Melander and Brues.

Middle tibiae not over one and one-fourth times as long as their femora (widespread in U. S. and Europe).....................No. 128, *plumipes* Scopoli.

20. Hind femora ciliated with long black hairs; front violet (Eastern States). No. 113, *marginatus* Aldrich.

Hind femora without, or with pale, cilia; front green.................... 21.

21. Hind femora ciliated with long whitish hairs on lower inner edge (Eastern States). No. 134, *gracilis* Aldrich.

Hind femora without cilia below.. 22.

22. Hind margin of wing with a conspicuous sinus between the tips of fifth and sixth veins (Eastern States)..............................No. 131, *fulvipes* Loew.

Hind margin of wing normal, rather evenly rounded.................... 23.

23. Hypopygium rudimentary, lamellae not developed; tips of hind tibiae wholly yellow (Illinois)............................No. 176, *imperfectus*, new species.

Hypopygium normal, lamellae rather large; hind tibiae slightly infuscated at tip (New Mexico)............................No. 111, *dorsalis*, new species.

24. Middle tarsi wholly deep black, the first joint thickened about as the hind basitarsi are (New Hampshire; Labrador)............No. 129, *dasypodus* Coquillett.

Middle basitarsi mostly yellow.. 25.

25. Fore tarsi ornamented.. 26.

Fore tarsi plain.. 38.

26. Hind femora ciliated on lower inner edge (Alaska; Europe). No. 119, *plumitarsis* Fallen.

Hind femora without cilia.......... 27.

27. Front green or bronze colored.......... 28.

Front violet.......... 37.

28. Fifth joint of fore tarsi longer than fourth.......... 29.

Fifth joint of fore tarsi shorter than fourth.......... 35.

29. Fifth joint of fore tarsi only a little enlarged (Western States). No. 197, *coquilletti* Aldrich.

Enlargement of fifth joint of fore tarsi conspicuous.......... 30.

30. First and second joints of fore tarsi of equal length.......... 31.

Second joint of fore tarsi shorter than first.......... 32.

Second joint of fore tarsi a little longer than first.......... 34.

31. Third joint of fore tarsi one-fourth as long as second (Colorado; Wyoming). No. 152, *æratus*, new species.

Third joint of fore tarsi half or more than half as long as second (Rocky Mountain region). No. 150, *procerus*, new species.

32. Fore tarsi about one and three-fourths times as long as their tibiae (Oregon). No. 147, *compactus*, new species.

Fore tarsi about one and a fourth times as long as their tibiae.......... 33.

33. Third joint of fore tarsi yellow; wing without an enlargement at tip of first vein (Colorado; Manitoba)..........No. 148, *walkerii*, new species.

Third joint of fore tarsi black; wings with a small but distinct enlargement at tip of first vein (New Mexico; Colorado)..........No. 149, *speciosus*, new species.

34. Fore tarsi about one and two-thirds times as long as their tibiae; fore coxae with a transverse, preapical, black line; scutellum slightly margined with yellow (Colorado)..........No. 118, *jugalis* Tucker.

Fore tarsi scarcely one and one-half times as long as their tibiae, third joint one-fourth as long as second; fore coxae without a black line; scutellum wholly metallic green (Rocky Mountain region)..........No. 150, *procerus*, new species.

35. Third joint of fore tarsi much longer than fourth (Massachusetts; Minnesota). No. 146, *angustatus* Aldrich.

Third and fourth joints of fore tarsi of about equal length.......... 36.

36. First four joints of fore tarsi yellow (Alaska; New York; Canada; Europe). No. 144, *discifer* Stannius.

First two joints of fore tarsi infuscated (Labrador)...No. 145, *boreus*, new species.

37. Fifth joint of fore tarsi much longer than fourth (eastern). No. 117, *porphyrops*, new species.

Fifth joint of fore tarsi about one-fourth as long as fourth (New York; Alaska; Canada; Europe)..........No. 144, *discifer* Stannius.

38. Hind femora without cilia.......... 39.

Hind femora ciliated on lower inner edge.......... 42.

39. Middle tibiae with a row of extremely long bristles, their basitarsi also with a row of very long hairs (widespread)..........No. 79, *comatus* Loew.

Middle tibiae and basitarsi normal, without such bristles and hairs.......... 40.

40. Tips of hind femora black; front violet (New Hampshire; Washington). No. 73, *sincerus* Melander.

Tips of hind femora not or scarcely infuscated; front green.......... 41.

41. Second antennal joint wholly yellow; metallic color of mesonotum dulled with thick yellowish gray pollen (New Mexico)......No. 111, *dorsalis*, new species.

Second antennal joint wholly black; mesonotum shining (Ontario; Regina; Wyoming)..........No. 94, *canadensis*, new species.

42. Front green (New Jersey; New York; North Dakota)...No. 101, *incisuralis* Loew

Front blue or violet.......... 43

43. All coxae yellow, middle pair a little blackened on outer surface (Wisconsin). No. 132, *flavicoxa*, new species.
Middle and hind coxae black with yellow tips.............................. 44.
44. Antennae wholly black (widespread)...No. 108, *renidescens* Melander and Brues.
First two joints of the antennae yellow; usually with a black line above (Eastern States). No. 113, *marginatus* Aldrich.

Group I.

1. Antennae black, the first and second joints may be yellow below.......... 2.
First antennal joint wholly yellow.. 26.
2. Antennae wholly black.. 3.
First antennal joint yellow below.. 5.
3. Front dark violet (California; New Mexico)................No. 173, *bakeri* Cole.
Front blue green (eastern species).. 4.
4. Wing with the anal angle prominent; fore coxae with black hairs on the anterior surface (Eastern States)..........................No. 167, *chysostoma* Loew.
Wing with the anal angle nearly obsolete; fore coxae with minute white hairs (Ontario)..................................No. 168, *parvicornis*, new species.
5. Third antennal joint twice as long as wide (Ontario). No. 191, *sicarius*, new species.
Third antennal joint not much longer than wide, at most not over one and one-half times as long as wide.. 6.
6. Fore tarsi ornamented... 7.
Fore tarsi plain.. 14.
7. Fifth joint of fore tarsi compressed and fringed above, sometimes with very minute hairs... 8.
Fifth joint of fore tarsi not or but little flattened, fringed laterally.......... 13.
8. Hind femora ciliated below; fore tarsi with the fourth joint white, fifth black (Pennsylvania; Ontario)......................No. 194, *laciniatus* Coquillett.
Hind femora without cilia below... 9.
9. First and second joints of fore tarsi of equal length.......................... 10.
Second joint of fore tarsi not over two-thirds as long as first................. 11.
10. Fore tarsi with the third joint longer than the second (Western States). No. 206, *canaliculatus* Thomson.
Fore tarsi with the third joint shorter than the second (Wyoming; Colorado.). No. 152, *æratus*, new species.
11. Fifth joint of fore tarsi only a little enlarged (Western States). No. 197, *coquilletti* Aldrich.
Fifth joint of fore tarsi much compressed and dilated.......................... 12.
12. Fifth joint of fore tarsi only about one-fourth as long as fourth (widespread). No. 144, *discifer* Loew.
Fifth joint of fore tarsi much longer than fourth (California.) No. 196, *talus*, new species.
13. Hypopygial lamellae incised into two lobes, so that the hyoppygium appears to have four lamellae (Eastern States)............No. 193, *quadrilamellatus* Loew.
Lamellae not incised, thick and bare (Eastern States)...No. 192, *scoparius* Loew.
14. Hind femora with a single preapical bristle...................................... 15.
The usual preapical bristle ending a row of bristles of increasing length; outer posterior edge of fore coxae green... 23.
15. First antennal joint long and thick; cilia of the calypters unusually long (widespread)...................................No. 165, *penicillatus*, new name.
Antennae normal.. 16.
16. Front violet (Wyoming)..............................No. 166, *misellus* Melander.
Front green.. 17.

17. Wings with a large blackish spot at apex (Maine; Massachusetts; New Hampshire; New York; Pennsylvania)........................No. 170, *harbecki*, new series.
Wings with such a spot.. 18.
18. First antennal joint yellow with the upper edge black..................... 19.
First antennal joint yellow on lower edge, at least nearly half black........ 20.
19. Hind tibiae with a blackish spot at tip on inner side, on which the hairs are longer and denser than on other portions (North Carolina).
No. 175, *carolinensis*, new species
Hind tibiae wholly yellow, scarcely darker on inner side (Labrador).
No. 169, *latronis*, new species.
20. Face silvery white.. 21.
Face golden yellow, at least decidedly yellowish in color.................... 22.
21. Anal angle of wing nearly obsolete (Ontario)...No. 168, *parvicornis*, new species.
Anal angle of wing rather prominent (Labrador)...No. 169, *latronis*, new species.
22. Anal angle of wing extending conspicuously toward the root of the wing; fore tarsi scarcely infuscated even at tip (Virginia).
No. 172, *virginiensis*, new species.
Anal angle of wing extending but little toward the root of the wing; all tarsi sharply black from the tip of the first joint (New Hampshire).
No. 171, *slossonae*, new species.
23. Last four joints of middle tarsi compressed (Western States).
No. 182, *aldrichii* Wheeler.
Middle tarsi plain as usual.. 24.
24. First antennal joint normal (Oregon; California)..No. 164, *cavatus*, new species.
First antennal joint long and with long bushy hair.......................... 25.
25. First two antennal joints broadly yellow below; lower 4–6 orbital cilia orange-yellow, the rest black (Western States).......No. 160, *consanguineus* Wheeler.
Antennae with the second joint wholly black or nearly so; lower half of the orbital cilia pale yellow (Western States)................No. 162, *aurifex*, new species.
26. Fore tarsi ornamented.. 27.
Fore tarsi plain .... 52.
27. Fore tarsi with the fifth joint only slightly enlarged; hind femora ciliated below... 28.
Ornamentation of fore tarsi conspicuous...................................... 29.
28. Fifth joint of fore tarsi wholly black, preceding joints yellow (Eastern States).
No. 205, *terminalis* Loew.
Fore tarsi infuscated from the tip of the first joint with the fifth joint pale yellowish except at base (New York; New Jersey)..No. 180, *domesticus*, new species.
29. Hind femora ciliated below.. 30.
Hind femora without cilia.. 38.
30. Hind coxae infuscated on basal half, at least with a large blackish spot on outer surface... 31.
Hind coxae wholly yellow or nearly so.. 33.
31. First three joints of fore tarsi of nearly equal length, the third being a little the longest (Western States).......................No. 206, *canaliculatus* Thomson.
Second joint of fore tarsi longer than the first, third very much shorter....... 32.
32. Hypopygial lamellae truncate at apex, with a short, but rather acute point at upper corner (California; Oregon)...................No. 210, *grandis* Aldrich.
Lamellae not truncate, but with a long acute point in the center of their apical end (California)............................No. 211, *superbus*, new species.
33. Humeri yellow, at least below; fifth joint of fore tarsi white................ 34.
Humeri metallic.. 36.

34. Cilia of hind femora very short, not over one-fifth as long as the width of the femora (Louisiana; New Jersey)..............No. 201, *distinctus*, new variety.
Cilia of hind femora at least half as long as the width of the femora.......... 35.
35. Second joint of fore tarsi about equal the fifth in length (Eastern States). No. 200, *funditor* Loew.
Second joint of fore tarsi about equal in length to fourth and fifth joints taken together (Louisiana).........................No. 201, *distinctus*, new variety.
36. Fore tarsi with the first four joints yellow, fifth black, compressed, but rather small (Eastern States)...............................No. 212, *ruficornis* Loew.
Fore tarsi with the two first joints yellow, third and fourth black, fifth white (New York; Minnesota).......................No. 199, *ainsliei*, new species.
Fore tarsi with the first, second and basal half of third joint yellow, the remainder black; third and fourth joints fringed above with long black hairs........ 37.
37. Cilia of hind femora distinctly longer than the width of the femora (widespread). No. 215, *cuprinus* Loew.
Cilia of hind femora not half as long as the width of the femora (New York; Canada)....................................No. 216, *absonus*, new species
38. Basal half of hind coxae blackish, at least on outer surface................ 39.
Hind coxae wholly yellow.. 46.
39. Fore tarsi with the second joint nearly one-fourth longer than fifth.......... 40.
Fore tarsi with the second joint as long as the first, or shorter................ 41.
40. Lamellae of the hypopygium scarcely twice as long as wide (Western States). No. 207, *tenuipes* Aldrich.
Lamellae four times as long as wide (California)...No. 211, *superbus*, new species.
41. Fore tarsi with the first and second joints of nearly equal length............ 42.
Fore tarsi with the second joint distinctly shorter than the first............ 43.
42. Third joint of fore tarsi longer than the second (Western States). No. 206, *canaliculatus* Thomson.
Third joint much shorter than the second (Wyoming; Colorado). No. 152, *æratus*, new species.
43. Hypopygial lamellae with a deep incision on upper edge (Western States). No. 209, *duplicatus* Aldrich
Hypopygial lamellae normal... 44.
44. Empodium large, white, forming a conspicuous white tip to the tarsi (Washington)...No. 198, *plumosus* Aldrich.
Empodium small, or at least not conspicuously large......................... 45.
45. Wings with a small lobe at tip of sixth vein; costa not enlarged at junction of first vein; middle basitarsi with a large bristle above, hind basitarsi only a little yellow at base (California)..............No. 151, *completus*, new species.
Wings without such a lobe: costa with a long tapering enlargement; middle basitarsi without a bristle above; hind basitarsi yellow with the tip narrowly black (Western States)..............................No. 195, *occidentalis* Aldrich.
46. Tarsal ornamentation in the form of a fringe of long black hairs on upper edge of third and fourth joints of fore tarsi, none of the joints much compressed.. 47.
Fore tarsi with one or more compressed joints.......................... 48.
47. Wings long and narrowed at base, with a very small lobe at tip of sixth vein (widespread).....................................No. 213, *longipennis* Loew.
Wings of ordinary form, rather evenly rounded behind (Illinois; Indiana; Ontario)...No. 214, *sarotes* Loew.
48. Last three joints of fore tarsi compressed, third white, fourth and fifth black with white tips (Kansas; Texas)......................No. 202, *willistonii* Aldrich.
Third joint of fore tarsi not compressed.................................. 49.
49. Fifth joint of fore tarsi wholly white (Louisiana)..No. 201, *distinctus*, new variety.
Fifth joint of fore tarsi partly or wholly black............................ 50.

50. Fifth joint of fore tarsi wholly black, rather small, with a finger-like appendage extending over the claws (Lousiana) .... No 208, *digitus*, new species.
Fifth joint of fore tarsi large, conspicuously tipped with white, or with the empodium large and white .... 51.

51. Fifth joint of fore tarsi with an appendage resembling a sixth joint, both tipped with white (District of Columbia; Louisiana; Illinois). No. 203, *sexarticulatus* Loew.
Fourth and fifth joints of fore tarsi of about equal size, black; fifth joint with a white extension nearly as large as the joint itself, formed by the enlarged empodium (Texas) .... No. 204, *sphaeristes* Brues.

52. Hind femora ciliated below; front in both species either green or violet....... 53.
Hind femora without cilia .... 54.

53. Humeri more or less yellow; cilia of hind femora shorter than the width of the femora (widespread) .... No. 179, *scapularis* Loew.
Humeri metallic; cilia of hind femora longer than the width of the femora (New Jersey; New York) .... No. 180, *domesticus*, new species.

54. Arista tipped with a lamella (Washington; Alaska) ...... No. 109, *hastatus* Loew.
Arista plain .... 55.

55. Middle tarsi compressed and widened (widespread) .... No. 181, *latipes* Loew.
Middle tarsi plain .... 56.

56. Wings with a deep sinus between the tips of fifth and sixth veins .... 57.
Wings normal in outline .... 58.

57. Wings with only a small incision at tip of fifth vein (Illinois; New Hampshire; New York) .... No. 131, *fulvipes* Loew.
Wings with a deep incision at tip of fifth vein, which causes a distinct lobe just basally of fifth vein (North Carolina) .... No. 175, *carolinensis*, new species.

58. Costa not thickened at tip of first vein; face silvery (New York). No. 205, *terminalis* Loew.
Costa a little thickened from the tip of first vein, tapering nearly to its tip; face yellow (Tennessee; Kansas) .... No. 174, *aurifacies* Aldrich.
Costa with a conspicuous, elongated, knot-like enlargement at tip of first vein. 59.

59. Hypopygium very small, its lamellae not developed (Illinois). 176, *imperfectus*, new species.
Hypopygium and its lamellae normal (Eastern States)..... No. 177, *vittatus* Loew.

FEMALES (Synopsis).

A¹. All femora black, at least on basal half.
  B¹. All tibiae black .... 3.
  B². Anterior tibiae yellow and sometimes the others also.
    C¹. Inferior orbital cilia black.
      D¹. Fore tibiae yellow, middle mostly, hind ones wholly black .... 28.
      D². Four anterior tibiae yellow .... 34.
      D³. All tibiae yellow, hind ones may be black at tip .... 43.
    C². Inferior orbital cilia pale .... 47.
A². Middle femora mainly yellow, anterior and posterior ones black on basal half or more .... 63.
A³. Anterior and middle femora yellow, posterior ones black .... 67.
A⁴. Middle and posterior femora yellow, anterior ones largely black .... 68.
A⁵. All femora yellow, extreme base or tip may be blackened.
  B¹. Orbital cilia wholly black .... 72.
  B². Inferior orbital cilia pale.
    C¹. Cilia of the calypters pale.
      D¹. First antennal joint black at least above .... 84.
      D². Antennae yellow, at least the first joint wholly yellow .... 102.

- C². Cilia of the calypters black.
  - D¹. Tips of hind tibiae black.
    - E¹. Tips of hind femora black, at least a little blackened above........ 107.
    - E². Tips of hind femora wholly yellow.................................. 114.
  - D². Hind tibiae without a black tip, at most a little blackened on inner side at tip.
    - E¹. Hind tarsi wholly black, or nearly so.
      - F¹. First antennal joint black, at least on upper edge................ 149.
      - F². First antennal joint wholly yellow................................ 160.
    - E². Posterior basitarsi largely yellow.
      - F¹. First antennal joint black, at least above........................ 176.
      - F². First antennal joint wholly yellow.
        - G¹. Third antennal joint wholly black................................ 192.
        - G². Third antennal joint yellow, at least at base.................... 198.

FEMALES.

1. Femora black, at least one pair mainly black................................ 2.

Femora yellow, the tips or extreme base may be blackened........................ 71.

2. All femora and tibiae black, knees may be more or less yellow............... 3.

One or more pairs of tibiae, and sometimes also one or two pairs of femora mainly yellow or yellowish.. 24.

3. Middle tarsi with each joint enlarged and black at tip; first two antennal joints yellow with the upper edge black...No. 33, *appendiculatus*, new species.

Middle tarsi normal, their joints not noticeably enlarged at tip; antennae wholly black, or with the first joint slightly yellow below.................. 4.

4. Middle and usually hind femora with two or three preapical bristles........ 5.

Middle and hind femora each with only one preapical bristle.................... 8.

5. Lower orbital cilia black... 6.

Lower orbital cilia pale.. 7.

6. Wings with a conspicuous brown apical spot......No. 23, *argentipes*, new species.

Wings clouded along the veins and usually in front of the third vein,
No. 17, *paluster* Melander and Brues.

7. Third antennal joint nearly orbicular in outline, with the arista inserted at upper apical corner, and with a small notch below it; fore tarsi distinctly longer than their tibiae........................No. 4, *sordidatus*, new species.

Third antennal joint a little longer than wide, the arista inserted at the middle of upper edge; fore tarsi scarcely longer than their tibiae,
No. 16, *adaequatus*, new species.

8. Cilia of the calypters pale, still they may appear blackish in certain lights.. 9.

Cilia of the calypters black.. 11.

9. Rather large species with the tip of the fifth vein much bent and evanescent at tip, which is in a notch of the hind margin of the wing,
No. 9, *nigricauda*, new species.

Rather small species with the tip of the fifth vein gently arched, and nearly reaching the wing margin, which is scarcely notched......................... 10

10. The silvery pollen of the face extending widely along the orbits of the front.
No. 6, *squamosus*, new species.

White pollen of the face not extending above the antennae.
No. 7, *viridis*, new species.

11. Lower orbital cilia black.. 12.

Lower orbital cilia pale.. 16.

12. Femora broadly yellow at tips; middle basitarsi with a bristle above.
No. 19, *manicula*, new species.

Femora wholly black, or nearly so... 13.

13. Middle basitarsi without a large bristle above......No. 2, *monticola*, new species.
Middle basitarsi with a large bristle above.................................... 14.
14. Middle basitarsi mostly white or whitish......No. 22, *stenhammari* Zetterstedt.
Middle basitarsi black.. 15.
15. Antennae and fore coxae wholly black................No. 20, *corax* Osten Sacken.
First antennal joint yellow below; fore coxae usually conspicuously yellow on the whole inner side............................No. 21, *acricola*, new species.
16. Hind margin of wing expanded a little just basally from the tip of the fifth vein, so as to form a slight sinus between this point and tip of sixth vein; all tarsi wholly black..No. 14, *detersus* Loew.
Hind margin of wing nearly evenly rounded................................ 17.
17. Second and third joints of fore tarsi yellowish, first black...No. 18, *tetricus* Loew.
Fore tarsi wholly black, or black from the tip of the first joint............. 18.
18. Middle basitarsi decidedly yellow at base, sometimes mostly yellow (western species).. 19.
Middle tarsi wholly black or nearly so...................................... 21.
19. Front, occiput, and thorax thickly covered with coarse yellowish pollen, which nearly conceals the ground color.................No. 218, *aethiops*, new species.
Front and thorax metallic as usual.. 20.
20. Wings with third and fourth veins decidedly convergent at tips.
No. 10, *ovatus* Loew.
Wings with third and fourth veins only slightly convergent.
No. 24, *acuminatus* Loew.
21. Middle basitarsi more or less yellow at base, usually considerably so; fore tibiae more or less tinged with yellow..........................No. 10, *ovatus* Loew.
Middle basitarsi wholly black... 22.
22. Bend in last section of fourth vein near its middle; fore tibiae and femora wholly black, or very nearly so ....No. 12, *multisetosus*, new species.
Bend in last section of fourth vein considerably before its middle; fore femora and tibiae narrowly yellow at their tips.............................. 23.
23. Bend in last section of fourth vein about the length of the cross vein beyond that vein ....No. 11, *myosota* Osten Sacken.
Bend in last section of fourth vein distinctly more than the length of the cross vein beyond that vein........................No. 8, *nigrimanus*, new species.
24. All the femora more than half black.................................... 25.
One or two pairs of femora yellow on more than distal half .... 62.
25. Lower orbital cilia black... 26.
Lower orbital cilia pale.. 47.
26. All tibiae black or blackish, except that the middle pair have a white or yellowish ring in the middle; their basitarsi mostly whitish.
No. 22, *stenhammari* Zetterstedt.
At least fore tibiae yellow.. 27.
27. Fore tibiae yellowish; middle tibiae black with a yellowish ring occupying their middle third, sometimes only base and tip a little infuscated.
No. 22, *stenhammari* Zetterstedt.
Fore tibiae yellow; middle tibiae black, except that sometimes they are a little yellow at tip or at base along upper edge of basal half................... 28.
Four anterior tibiae yellow... 34.
28. Middle and hind femora each with two preapical bristles................ 29.
Middle and hind femora each with one preapical bristle................. 31.
29. Preapical bristles on middle and hind femora, one before the other, arranged longitudinally.................................No. 54, *remus*, new species.
Preapical bristles one above the other or nearly so, arranged vertically...... 30.

30. Middle basitarsi with a bristle above............No. 38, *bisetosus*, new species.
Middle basitarsi without a bristle above..............No. 25, *beatus*, new species.
31. Middle basitarsi with a large bristle above (western)..No. 20, *corax* Osten Sacken.
Middle basitarsi without a bristle above.................................. 32.
32. Middle tibiae with one bristle below; bend in last section of fourth vein not unusually small..................................No. 24, *acuminatus* Loew.
Middle tibiae with more than one bristle below; bend in last section of fourth vein very small... 33.
33. Head with two yellow bristles on each side near the proboscis, No. 41, *aequalis*, new species.
Head without yellow bristles below.............No. 59, *nodipennis*, new species.
34. Hind tibiae mostly or wholly black... 35.
Hind tibiae largely yellow.. 43.
35. Middle and hind femora each with two or three preapical bristles........... 36.
Middle and hind femora each with one preapical bristle.................... 37.
36. Middle and hind femora each with three preapical bristles. No. 47, *partitus* Melander and Barnes.
Middle and hind femora each with two preapical bristles. No. 54, *remus*, new species.
37. Front violet, or at least bluish... 38.
Front green... 40.
38. Fore and middle tarsi black from the tip of the first joint, sometimes brown almost to the base..................................No. 55, *adultus*, new species.
Fore and middle tarsi almost wholly yellow................................ 39.
39. Hind tibiae with the yellow on upper edge reaching their middle, or nearly so. No. 29, *gratus* Loew.
Yellow on upper edge of hind tibiae reaching one-fourth or less than one-fourth their length..................................No. 30, *calcaratus* Aldrich.
40. Hind tibiae almost wholly black, only a very little yellowish at extreme base; wings distinctly and rather uniformly brownish.......No. 32, *johnsoni* Aldrich.
Yellow of hind tibiae extending along the upper edge for some distance at least; wings grayish, not tinged with brown.................................. 41.
41. Middle tarsi infuscated almost from their base; fore tarsi black from the tip of the first joint..No. 58, *laticornis* Loew.
Fore and middle tarsi almost wholly yellow................................. 42.
42. Hind tibiae with the yellow on their upper edge extending to their middle, or nearly so..No. 29, *gratus* Loew.
Yellow of hind tibiae reaching only to basal fourth or slightly more. No. 30, *calcaratus* Aldrich.
43. Fore tarsi black from the tip of the first joint, or wholly black............... 44.
Fore tarsi only a little darkened at tip..................................... 46.
44. Hind femora with two preapical bristles; bristles on lower part of the head all black..................................No. 36, *nubifer*, new species.
Hind femora each with one preapical bristle; head with two yellow or whitish bristles near the proboscis.. 45.
45. Last section of fourth vein nearly straight, only a little bent. No. 41, *aequalis*, new species.
Bend in last section of fourth vein small but quite abrupt. No. 46, *alacer*, new species.
46. Fore tibiae with two or three bristles on the lower anterior edge; bristles on lower part of the head all black.......................No. 49, *retinens*, new species.
Fore tibiae with only one small bristle below; head with two yellowish bristles below each side of the proboscis..................No. 46, *alacer*, new species.

47. Middle and hind femora each with three preapical bristles; middle tibiae with one bristle below, which is unusually long..No. 47, *partitus* Melander & Brues.

Middle and hind femora each with one preapical bristle.................... 48.

48. Hind tibiae wholly black, the extreme base may be yellow................. 49.

All tibiae yellow, at least at base on upper edge for a considerable distance; posterior pair black at tip.. 50.

49. Middle tibiae yellow; front covered with white pollen, which almost conceals the ground color..........................No. 28, *agronomus* Melander and Brues.

Middle tibiae black with more or less yellow on upper edge, sometimes yellowish brown; front shining, metallic....................No. 24, *acuminatus* Loew.

50. Third antennal joint large for a female, somewhat triangular, pointed, the arista inserted close to its tip...................No. 40, *angusticornis*, new species.

Third antennal joint of normal size, if large the arista distinctly dorsal...... 51.

51. First antennal joint yellow below..............No. 27, *conspectus*, new species.

Antennae wholly black, or very nearly so................................. 52.

52. Middle tarsi wholly black (Alaska),......................No. 219, new species.

Middle basitarsi largely yellow.. 53.

53. Middle tarsi yellow with the tips of the joints broadly black, their anterior surface with silvery pollen ....No. 50, *remipes* Wahl.

Middle tarsi black from the tip of the first joint.......................... 54.

54. Wings with the third and fourth veins convergent toward their tips, where they are scarcely more than half as far apart as at the bend in fourth vein.

No. 35, *convergens* Aldrich.

Third and fourth veins but little convergent beyond the bend in last section of fourth vein.. 55.

55. Black at tip of posterior tibiae extending along the inner surface nearly or quite to their base.. 56.

Black at tip of posterior tibiae not extending up the inner surface to any great extent, usually not at all... 58.

56. Small hairs on anterior surface of fore coxae wholly black or very nearly so.

No. 45, *albiciliatus* Loew.

Small hairs on fore coxae partly white, these white hairs conspicuous on outer half of the anterior surface.. 57.

57. Fore tarsi scarcely as long as their tibiae, fifth joint as long as third; orbital cilia silvery white ....No. 48, *setifer* Loew.

Fore tarsi as long as their tibiae, third joint as long as fourth and fifth taken together; orbital cilia white but tinged with yellow..No. 26½, *burnsii*, new species.

58. Orbital cilia wholly black, except one or two near the proboscis............ 61.

Many of the lower orbital cilia pale.. 59.

59. Hind femora with short but distinct black cilia on lower inner edge.

No. 45, *albiciliatus* Aldrich.

Hind femora without cilia on lower inner edge.............................. 60.

60. Small species with the bend in last section of fourth vein distinctly before its middle....................................No. 44, *xanthocnemus* Loew.

Moderately large species, with the bend in last section of fourth vein just before its middle..........................No. 37, *barbicauda*, new species.

61. Last section of fourth vein only a little bent....No. 41, *aequalis*, new species.

Last section of fourth vein with a small but rather sharp bend.

No. 46, *alacer*, new species.

62. Middle femora largely or wholly yellow, anterior and posterior ones black on basal half or more... 63.

Anterior and middle femora yellow, posterior pair black..................... 67.

Middle and posterior femora largely yellow, anterior ones black on basal half or more... 68.

63. Middle and hind femora each with two preapical bristles; hind tibiae black with their base yellow or yellow with tip and a stripe on inner side black. No. 54, *remus*, new species.

Middle and hind femora each with one preapical bristle.................... 64.

64. Middle femora black at base, shading into yellow toward the tip............ 65.

Middle femora mostly yellow on the sides, black at base and on lower edge as far as the middle or nearly so.. 66.

65. Small species, face silvery white, orbital cilia whitish. No. 44, *xanthocnemus* Loew.

Rather large species; face gray; orbital cilia yellow. No. 51, *sedulus*, new species.

66. Orbital cilia wholly black....................No. 52, *groenlandicus* Zetterstedt.

Lateral and inferior orbital cilia pale..............No. 51, *sedulus*, new species.

67. First antennal joint black above, yellow on lower half; lower orbital cilia yellowish..No. 66, *varipes* Coquillett.

First antennal joint wholly yellow; orbital cilia wholly black. No. 67, *flavilacertus*, new species.

68. Lower orbital cilia and antennae wholly black; middle and hind femora each with two preapical bristles.................No. 63, *opportunus*, new species.

Lower orbital cilia pale.. 69.

69. First and second antennal joints broadly yellow below; the usual preapical bristle on hind femora ending a row of three or four bristles. No. 62, *amnicola* Melander and Brues.

Antennae wholly black; hind femora with one preapical bristle............. 70.

70. Hind tibiae mostly yellow........................No. 61, *bryanti*, new species.

Hind tibiae almost wholly black.................No. 217, *micropyga* Wahlberg.

71. Orbital cilia wholly black... 72.

Lower orbital cilia pale.. 82.

72. Fore coxae black or green, the tips may be yellow........................ 73.

Fore coxae yellow, the outer side may be more or less black or green........ 75.

73. First and second antennal joints yellow below.......No. 161, *bruesi*, new name.

Antennae wholly black.. 74.

74. Front violet.....................................No. 82, *pachycnemus* Loew.

Front green......................................No. 68, *rupestris* Haliday.

75. Middle basitarsi with a large bristle above................................ 76.

Middle basitarsi without a bristle above................................... 77.

76. Antennae wholly black........................No. 85, *brevipennis* Meigen.

First antennal joint yellow..........................No. 88, *dorycerus* Loew.

77. Posterior basitarsi with only one large bristle above; a small, very shining species. No. 84, *barbipes*, new species.

Posterior basitarsi with more than one large bristle above.................. 78.

78. Front thickly covered with brown pollen, nearly or quite concealing the ground color...............................No. 68, *rupestris* Haliday.

Front metallic, shining... 79.

79. Antennae wholly black.. 80.

First and second antennal joints yellow below............................. 81.

80. Hind tibiae black at tip for nearly or quite one-third their length. No. 85, *brevipennis* Meigen.

Hind tibiae black at tip for about one-fifth their length. No. 83, *ungulatus* Linnaeus.

Hind tibiae wholly yellow.......................No. 161, *bruesi*, new name.

81. Orbital cilia wholly black......................No. 161, *bruesi*, new name.

Lower orbital cilia yellow with from one to six black bristles next to the proboscis..............................No. 160, *consanguineus* Wheeler.

82. Cilia of the calypters pale.. 83.

Cilia of the calypters black... 105.

83. Antennae black, the first and second joints may be yellow below........... 84.
Antennae yellow, at least the first joint wholly yellow......................102.
84. Anterior coxae blackened at base for half their length or more, sometimes the yellow extends to the base on inner edge................................ 85.
Anterior coxae yellow, at least on the front side............................ 89.
85. Hind femora and tibiae each with a black tip........No. 69, *fucatus*, new species
Hind femora wholly yellow.. 88.
[86, 87, omitted.]
88. Hind tibiae black at tip for one-fourth their length..No. 116, *pilatus*, new species.
Hind tibiae wholly yellow, their tarsi wholly black..No. 138, *longimanus* Loew.
89. Hind tibiae distinctly blackened at tip..................................... 90.
Hind tibiae wholly yellow, or very nearly so................................. 93.
90. Middle tibiae with three bristles below, two near apical third and one near basal third...No. 115, *albicoxa* Aldrich.
Middle tibiae with only one bristle below, placed near apical third (the cilia of the calypters are often more or less black in the three forms coming under this).. 91.
91. Fore coxae wholly yellow; last three joints of fore tarsi of equal length.
No. 92, *indigena*, new species.
Fore coxae with a small blackish spot at base on outer surface; third joint of fore tarsi longer than fourth, fifth equal to fourth................................ 92.
92. Fifth joint of fore tarsi yellow or yellowish, paler than those preceding it.
No. 89, *socius* Loew.
Fifth joint of fore tarsi black.............No. 90, *socius*, var. *gladius*, new variety.
93. Anterior coxae with a green or blackish streak on posterior edge of outer surface.
No. 159, *crenatus* Osten Sacken.
Anterior coxae wholly yellow or with a small blackish spot at base on outer surface... 94.
94. Hind tarsi wholly black, or very nearly so.................................. 95.
Posterior basitarsi largely yellow.. 98.
95. First antennal joint yellow below....................No. 115, *albicoxa* Aldrich.
Antennae wholly black, or very nearly so...................................... 96.
96. Cross-vein long, nearly equaling in length the distance to the bend in last section of fourth vein, which is near its basal third.........No. 188, *palaestricus* Loew.
Cross-vein distinctly shorter than the distance to the bend in last section of fourth vein.. 97.
97. Bend in last section of fourth vein just before its middle.
No. 141, *splendidus* Loew.
Bend in last section of fourth vein at second fifth of its length.
No. 142, *splendidulus* Loew.
(The characters given as separating these three last species are unsatisfactory and probably uncertain.)
98. Middle basitarsi without a bristle above...........No. 183, *bolsteri*, new species.
Middle basitarsi with a large bristle above near apical third................. 99.
99. Middle basitarsi with two bristles near basal third, the one on upper anterior edge may be a little the smallest...100.
Middle basitarsi with only one large bristle above...........................101.
100. Antennae wholly black when viewed from above.......No. 189, *batillifer* Loew.
First antennal joint yellow on the lower edge..............No. 184, *tonsus* Loew.
101. Face white...................................No. 186, *versutus*, new species.
Face slightly yellowish..........................No. 187, *dakotensis* Aldrich.
Face distinctly tinged with yellow...................No. 185, *eudactylus* Loew.
(Characters given as separating these three species very unsatisfactory.)
102. Middle tarsi wholly deep black (Alaska)..................No. 219, new species.
Middle basitarsi yellow, black at tip.. 103.

103. Middle basitarsi with a large bristle above............No. 133, *variabilis* Loew.

Middle basitarsi without a bristle above.................................... 104.

104. Middle tibiae with one bristle below; tips of all the joints of the fore tarsi blackened...No. 178, *celeripes*, new species.

Middle tibiae with one or more bristles below; fore tarsi mostly yellow. (We have no females of these species, but they would probably go in here)................................ No. 190, *tener* Loew. / No. 135, *luteipennis* Loew.

105. Tips of hind tibiae black... 106.

Hind tibiae wholly yellow or nearly so, sometimes blackened at tip on inner side.. 147.

106. Tips of hind femora, at least a little blackened on upper edge................ 107.

Hind femora wholly yellow... 114.

107. Anterior coxae yellow, at most with a small blackish spot at base on outer surface.. 108.

Anterior coxae considerably blackened at base, sometimes mostly black, at least with a large black spot at base on outer side.............................. 109.

108. Middle and hind femora each with one preapical bristle..No. 79, *comatus* Loew.

Middle and hind femora each with two or three preapical bristles. No. 78, *trisetosus*, new species.

109. Anterior femora brownish on the upper edge (rarely this is faint). No. 71, *affluens*, new species.

Fore femora not darker on upper edge...................................... 110.

110. Last section of fourth vein nearly straight, with only a very small bend, which is close to its middle............No. 74, *sincerus*, var. *subdirectus*, new variety.

Last section of fourth vein with a small but distinct bend, which is before its middle.. 111.

111. First antennal joint yellow below..................No. 72, *discolor*, new species.

Antennae wholly black... 112

112. Fore coxae almost wholly blackish....................No. 73, *sincerus* Melander.

Fore coxae with a rather large blackish spot on outer side................... 113.

113. Tips of hind femora black for a distance equal to the length of the preapical bristle, the black extending to the lower edge or nearly so. No.75, *genualis*, new species.

Tips of hind femora with a small black spot on upper edge. No. 80, *virga* Coquillett.

114. Middle and hind tarsi wholly black.. 115.

Middle basitarsi largely yellow... 116.

115. Antennae black with the lower part of the first joint yellow. No. 129, *dasypodus* Coquillett.

Antennae yellow, third joint blackened on apical half. No. 130, *uxorcula*, new species.

First two antennal joints yellow, third black........No. 128, *plumipes* Scopoli.

116. Antennae black, first and second joints sometimes yellow below........... 117.

First antennal joint wholly yellow... 138.

117. Front blue or violet, sometimes almost black............................... 118.

Front green or bronze color... 123.

118. Last section of fourth vein with a stump at its bend....................... 119.

Last section of fourth vein only moderately bent, without a stump......... 120.

119. Middle tibiae with one bristle below, placed near the middle of lower anterior edge; antennae mostly black ....No. 100, *ramifer* Loew.

Middle tibiae with three bristles below, two near apical, one near basal third; first two antennal joints yellow with a narrow black line above. No. 114, *reflectus* Aldrich.

120. Middle and hind femora each with two preapical bristles.
No. 108, *renidescens* Melander and Brues.
Middle and hind femora each with one preapical bristle.................... 121.

121. Second antennal joint wholly black............No. 117, *porphyrops*, new species.
Second antennal joint yellow with the upper edge narrowly black.......... 122.

122. Hind tibiae black at tip for nearly one-fourth their length.
No. 114, *reflectus* Aldrich.
Hind tibiae only a little blackened at tip.........No. 113, *marginatus* Aldrich.

123. Fore coxae with a green or black stripe on outer posterior edge, which is wide above and tapers to a point near the tips of the coxae................... 124.
Fore coxae considerably blackened at base.............................. 125
Fore coxae wholly yellow, except sometimes a blackish spot at base on outer surface.. 126.

124. Hind femora with a row of bristles of increasing size, ending in the usual preapical bristle.....................................No. 182, *aldrichii* Wheeler.
Hind femora with only one preapical bristle ....No. 165, *penicillatus*, new name.

125. Fore coaxe nearly half black.......................No. 116, *pilatus*, new species.
Fore coxae mostly black; hind tibiae black at tip for about one-fifth their length.
No. 121, *obcordatus* Aldrich.
(The female of *pollex* Osten Sacken, No. 120, probably goes in here and is likely to differ from that of *obcordatus* in having the black at tip of hind tibiae more extensive.)

126. Antennae wholly black, or nearly so.................................. 127.
First antennal joint distinctly yellow below............................ 128.

127. Length about 3 mm.; dorsum of thorax bronze brown with brown pollen.
No. 99, *brunneus* Aldrich.
Length 4.5 mm.; dorsum of thorax metallic green...No. 102, *melanocerus* Loew.

128. Middle basitarsi with a conspicuous bristle above........................ 129.
Middle basitarsi without a bristle above................................. 132.

129. Middle tibiae with only one bristle below.....No. 117, *porphyrops*, new species.
Middle tibiae with three bristles below, two near apical and one near basal third... 130.

130. Bristle on middle basitarsi rather small; third vein bent backward so as to approach fourth at tip.......................No. 94, *canadensis*, new species.
Bristle on middle basitarsi large; tips of third and fourth veins not convergent, 131.

131. Bend in last section of fourth vein distinctly before its middle (eastern species).
No. 105, *decorus*, new species.
Bend in last section of fourth vein very near its middle (N. Europe; Alaska).
No. 119, *plumitarsis* Fallen.

132. Middle tibiae with more than one bristle below.......................... 133.
Middle tibiae with only one bristle below................................. 134.

133. Middle tibiae with three bristles below, two at apical, one at basal third: fore tarsi black from the tip of the first joint......No. 94, *canadensis*, new species.
Middle tibiae with two bristles below, one near apical third and one near the middle.......................................No. 191, *sicarius*, new species.

134. Fore tarsi yellow with the fifth joint black, or wholly yellow.
No. 191, *sicarius*, new species.
Fore tarsi black from the tip of the first joint........................... 135.

135. Fore tibiae with two large bristles below; rather large species with large bristles on the tibiae.......................................No. 106, *setosus* Loew.
Fore tibiae with only small bristles below; rather small species............ 136.

136. Fifth joint of fore tarsi yellowish, paler than those preceding it.
No. 89, *socius* Loew.
Fore tarsi black from the tip of the first joint........................... 137.

137. Fore coxae wholly yellow........................No. 92, *indigena*, new species.
Anterior coxae with a blackish spot at base on outer surface.
No. 101, *incisuralis* Loew.

138. Third antennal joint wholly black..139.
Third antennal joint yellow, at least at base..................................141.

139. Second antennal joint more or less yellow, usually largely so.
No. 125, *flagellitenens* Wheeler.
Second antennal joint wholly black or nearly so...............................140.

140. Bend in last section of fourth vein at basal third; tips of third and fourth veins rather widely separated....................No. 147, *compactus*, new species.
Bend in last section of fourth vein a little beyond basal third: tips of third and fourth veins rather close together.............No. 123, *blandus*, new species.

141. Last section of fourth vein with a stump at the bend...........................142.
Last section of fourth vein only bent, without a stump..........................143.

142. Front shining.......................................No. 114, *reflectus* Aldrich.
Front opaque with pollen.............................No. 126, *bifractus* Loew.

143. Tips of middle tibiae blackish......................No. 109, *hastatus* Loew.
Tips of middle tibiae not at all infuscated.....................................144.

144. Front violet..145.
Front green...146.

145. Middle basitarsi with a large bristle above.............No: 124, *vigilans* Loew.
Middle basitarsi without a bristle above..................No. 127, *pugil* Loew.

146. Bend in last section of fourth vein at basal third....No. 128, *plumipes* Scopoli.
Bend in last section of fourth vein a little before its middle.
No. 175, *carolinensis*, new species.

147. Hind tarsi wholly black, or only a little yellowish at base....................148.
Hind basitarsi considerably yellow at base, usually yellow with a black tip. 175.

148. First antennal joint black, at least on upper edge..............................149.
First antennal joint wholly yellow...160.

149. Middle tarsi wholly black.......................No. 129, *dasypodus* Coquillett.
Middle basitarsi yellow with a black tip.......................................150

150. Front violet or blue...151.
Front green or bronze color..155.

151. Coxae yellow, middle pair more or less blackened on outer surface; middle basitarsi with a large bristle above...........No. 132, *flavicoxa*, new species.
Middle and hind coxae black with yellow tips, or with the outer surface largely black..152.

152. Middle and sometimes hind femora with two preapical bristles; antennae wholly black..No. 173, *bakeri* Cole.
Middle and hind femora each with one preapical bristle; first antennal joint yellow below...153.

153. First and second antennal joints yellow with a black line on upper edge.
No. 113, *marginatus* Aldrich.
Antennae wholly black..154.

154. Fore tarsi yellow with the fifth joint more or less black, sometimes wholly yellow, shorter than fourth; third and fourth veins convergent at tips; middle tibiae with one bristle below.............................No. 144, *discifer* Loew.
Fore tarsi black from the tip of the first joint, fourth and fifth joints of nearly equal length; third and fourth veins nearly parallel: middle tibiae with one bristle below...........................No. 117, *porphyrops*, new species.

155. Middle basitarsi without a bristle above.......................................156.
Middle basitarsi with a large bristle above.....................................157.

156. Fore tarsi yellow, usually with the fifth joint black, fifth joint shorter than fourth; third and fourth veins convergent....................No. 144, *discifer* Loew.
Fore tarsi black from the tip of the first joint, still the fifth joint yellowish.
No. 89, *socius* Loew.

157. Middle basitarsi wholly black..158.
Middle basitarsi yellow with a black tip....................................159.

158. Second and third antennal joints wholly black...No. 129, *dasypodus* Coquillett.
First, second and part of third antennal joints yellow.
No. 130, *uxorcula*, new species.

159. Last section of fourth vein bent near its middle.
No. 148, *walkeri*, new species.
Last section of fourth vein bent a considerable distance before its middle.
No. 150, *procerus*, new species.

160. Front blue or violet..161.
Front green or bronze..164.

161. Second antennal joint wholly black..............No. 153, *sufflavus*, new species.
Second anternnal joint partly or wholly yellow..............................162.

162. Second joint of middle tarsi a little longer than the first....No. 127 *pugil* Loew.
Second joint of middle tarsi about half as long as the first..................163.

163. Middle basitarsi without a bristle above............No. 113 *marginatus* Aldrich.
Middle basitarsi with a large bristle above, a little beyond its middle; small species................................No. 137, *wheelerii* Melander and Brues.

164. Third antennal joint wholly black..165.
Third anternnal joint partly or wholly yellow..............................173.

165. Second antennal joint wholly black..166.
Second antennal joint yellow, at least on inner side........................171.

166. Hairs on fore coxae mostly yellow and rather long..........................167.
Black hairs on fore coxae conspicuous and covering most of the anterior surface..168.

167. Hairs on inner edge of fore coxae and those near the tip black, also a cluster of longer black hairs at base on inner edge..............No. 155, *lobatus* Loew.
Hairs on fore coxae almost wholly yellow.....No. 156, *omnivagus*, new species.

168. First joint of fore tarsi not or but slightly longer than the two following joints taken together..............................No. 151, *completus*, new species.
First joint of fore tarsi nearly or quite as long as the three following taken together..169.

169. Tip of third vein considerably bent backward; fifth joint of fore tarsi distinctly longer than fourth..170.
Tip of third vein bent backward a little; fifth joint of fore tarsi scarcely longer than fourth..............................No. 150, *procerus*, new species.

170. Middle basitarsi with the large bristle on upper edge at apical third, and with another rather large bristle near it on upper anterior edge.
No. 152, *æratus*, new species.
Large bristle on middle basitarsi placed before apical third, without another bristle near it..............................No. 153, *sufflavus*, new species.

171. Middle basitarsi without a bristle above ....No. 198, *plumosus* Aldrich.
Middle basitarsi with a large bristle above..................................172.

172. Fore coxae with their hairs mostly yellow; hind margin of wing with a very small, but distinct lobe or expansion at tip of sixth vein. No. 155, *lobatus* Loew.
Fore coxae with black hairs, and with scarcely a trace of an expansion at tip of sixth vein..............................No. 154, *coloradensis* Aldrich.

173. Front and dorsum of thorax opaque with pollen; last section of fourth vein with a stump at the bend ....No. 126, *bifractus* Loew.
Front and thorax shining, metallic; last section of fourth vein without a stump at its bend..174.

174. Face wide, yellowish, or grayish white ....No. 131, *fulvipes* Loew.
Face silvery white, not very wide for a female ....No. 134, *gracilis* Aldrich.

175. First antennal joint black, at least on upper edge.........................176.

First antennal joint wholly yellow..191.

176. Fore coxae yellow with a green or blackish stripe on outer posterior edge, which is wide above, usually tapering to a point below.........................177.

Fore coxae wholly yellow, or blackened a little at base.....................183.

177. Hind femora with only one preapical bristle.....No. 165, *penicillatus*, new name.

The main preapical bristle ending a row of increasing size..................178.

178. One or more of the orbital cilia next to the proboscis black, above these are from four to ten orange colored cilia, the rest all black.
No. 160, *consanguineus* Wheeler.

Lateral and inferior orbital cilia all yellowish..............................179.

179. First antennal joint long and with long bushy hair; first and second joints broadly yellow on inner side below; arista thickened ..No. 169, *crenatus* Osten Sacken.

First antennal joint and arista nearly normal.................................180.

180. Second as well as first antennal joint conspicuously yellow below...........181.

Second antennal joint wholly black or only a little yellow on inner side....182.

181. Bend in last section of fourth vein very near basal third; third vein considerably bent backward at tip......................No. 158, *afflictus* Osten Sacken.

Bend in last section of fourth vein a little nearer the middle, because the portion beyond the bend is shorter; third vein not bent backward quite so much at tip...No. 163, *idahoensis* Aldrich.

182. Bend in last section of fourth vein not further from the cross-vein than the length of that vein; rather large species................No. 162, *aurifex*, new species.

Bend in last section of fourth vein distinctly further from the cross-vein than the length of that vein; rather small species...........No. 182, *aldrichii* Wheeler.

183. Antennae wholly black; middle femora with two preapical bristles.
No. 173, *bakeri* Cole.

First antennal joint yellow below..184.

184. Middle basitarsi without a bristle above...................................185.

Middle basitarsi with a bristle above.......................................187.

185. Fore tarsi yellow with the fifth joint black............No. 144, *discifer* Stannius.

Fore tarsi black from the tip of the first joint...............................186.

186. Middle tibiae with one bristle below............No. 171, *slossonae*, new species.

Middle tibiae with a row of three (sometimes only two) bristles on lower anterior edge...............................No. 170, *harbecki*, new species.

187. Inferior orbital cilia with a prominent black bristle near the proboscis.......188.

No black bristle on the lower part of the head near the proboscis............189.

188. Fore coxae black at base on the outer surface..........No. 192, *scoparius* Loew.

Fore coxae wholly yellow, or nearly so........No. 193, *quadrilamellatus* Loew.

189. Fore tarsi yellow with the fifth joint black........No. 194, *laciniatus* Coquillett.

Fore tarsi infuscated from the tip of the first joint.........................190.

190. Fore basitarsi yellowish-brown, the black at tip not sharply defined, shading into the yellowish color..........................No. 196, *talus*, new species.

Fore basitarsi yellow, the black at tip sharply defined, second joint usually a little yellowish at base..........................No. 197, *coquilletti* Aldrich.

191. Third antennal joint wholly black... 192.

Third antennal joint yellow, at least at base.............................. 198.

192. Second antennal joint wholly black.. 193.

Second antennal joint mostly yellow.. 195.

193. Middle basitarsi without a bristle above............No. 195, *occidentalis* Aldrich.

Middle basitarsi with a large bristle above.................................. 194.

194. Third vein distinctly bent backward at tip........No. 196, *talus*, new species.

Third vein scarcely bent backward at tip, nearly straight.
No. 197, *coquilletti* Aldrich.

195. Anterior femora with a few long, delicate, black hairs above near their base. No. 198, *plumosus* Aldrich.
Hairs on upper edge of fore femora at base scarcely longer than those on the remainder of the upper edge.......... 196.

196. Hind margin of wing rather deeply notched at tip of fifth vein. No. 209, *duplicatus* Aldrich.
Hind margin of wing not or but little notched at tip of fifth vein.......... 197.

197. Bend in last section a little beyond its basal third....No. 207, *tenuipes* Aldrich.
Bend in last section of fourth vein a little before its middle. No. 206, *canaliculatus* Thomson.

198. Hind coxae blackened on outer surface of basal half or more, at least with a large blackish spot covering most of basal half.......... 199.
Hind coxae yellow, still the outer surface sometimes has blackish streaks or spots.......... 207.

199. Middle basitarsi with a large bristle above.......... 200.
Middle basitarsi without a bristle above.......... 201.

200. Third vein bent backward a little so as to approach fourth at tip in an even curve..........No. 210, *grandis* Aldrich.
Third vein less bent at tip, nearly or quite parallel with fourth at tip. No. 211, *superbus*, new species.

201. Hind margin of wing deeply notched at tip of fifth vein.......... 202.
Hind margin of wing not or but little indented at tip of fifth vein.......... 203.

202. First antennal joint rather long for a female..........No. 181, *latipes* Loew.
First antennal joint short, of the usual length for a female. No. 175, *carolinensis*, new species.

203. Anterior tarsi yellowish with the fifth joint black.......... 204.
Anterior tarsi more or less infuscated from the tip of the first joint.......... 205.

204. Tip of third antennal joint black..........No. 206, *canaliculatus* Thomson
Antennae wholly yellow..........No. 212, *ruficornis* Loew.

205. Middle tibiae a little blackened at tip..........No. 109, *hastatus* Loew.
Middle tibiae wholly yellow, not infuscated at tip.......... 206.

206. Front and thorax with thick yellowish pollen, western..No. 207, *tenuipes* Aldrich.
Front and thorax with thin grayish pollen, shining, eastern. No. 131, *fulvipes* Loew.

207. Last section of fourth vein bent at an obtuse angle without a stump.......... 208.
Last section of fourth vein bent at a right angle or nearly so, with a stump at the bend; middle basitarsi with a large bristle above.......... 219.

208. Middle basitarsi with a large bristle above.......... 209.
Middle basitarsi without a bristle above.......... 215.

209. Humeri more or less yellow, at least the lower edge yellow. No. 179, *scapularis* Loew.
Humeri wholly metallic.......... 210.

210. All tarsi yellow, the anterior pair may have the last joint a little darkened. No. 212, *ruficornis* Loew.
Hind tarsi more or less infuscated from the tip of the first joint, at least the tips of the joints darkened.......... 211.

211. Fore tarsi black or infuscated from the tip of the first joint. No. 180, *domesticus*, new species.
Fore tarsi with the first joint wholly yellow, sometimes darkened from the base of the second joint.......... 212.

212. Fore tarsi black or blackish from the middle of the third joint, the black being rather sharply defined.......... 213.
Third joint of fore tarsi wholly yellow or yellowish.......... 214.

213. Wings narrowed toward the root; anal angle prominent; hind margin of wing with a slight sinus between the anal angle and the tip of the sixth vein.
No. 213, *longipennis* Loew.
Hind margin of wing evenly rounded; wing not narrower at root.
No. 214, *sarotes* Loew.
214. Dorsum of thorax with yellowish gray pollen......No. 203, *sexarticulatus* Loew.
Dorsum of thorax with only a little grayish white pollen.
No. 205, *terminalis* Loew.
215. Hind tarsi black from the tip of the first joint, sometimes the first joint largely blackish.. 216.
Hind tarsi yellow, at most a little infuscated from the tip of the first joint, but scarcely black even at tip.. 217.
216. Posterior femora with a row of bristles which end on the usual large preapical bristle...No. 181, *latipes* Loew.
Posterior femora with only one preapical bristle.....No. 174, *aurifacies* Aldrich.
217. Humeri yellow...................................No. 200, *funditor* Loew.
No. 201, *distinctus*, new variety.
Humeri metallic.. 218.
218. About three of the upper orbital cilia black........No. 203, *willistonii* Aldrich.
About six of the upper orbital cilia black...........No. 205, *terminalis* Loew.
219. Wings a little narrowed toward the base, still the anal angle quite prominent; hind margin of wing with a slight sinus between the anal angle and the tip of the sixth vein..............................No. 213, *longipennis* Loew.
Wings not narrowed at root, evenly rounded behind..................... 220.
220. I have found no characters to separate the following species: No. 177, *vittatus* Loew; No. 215, *cuprinus* Loew; No. 216, *absonus*, new species; probably the female of *sarotes* Loew (No. 214) may sometimes have a stump at the bend in the last section of fourth vein, in which case it would also come in here.

No. I. DOLICHOPUS CALAINUS Melander and Brues.

Dolichopus calainus MELANDER and BRUES, Biological Bull., vol. 1, 1900, p. 138.

Male.—Length, 5 mm.; of wing, 4 mm. Face narrow, silvery white, tinged a little with yellow above. Front blue-green, shining. Antennae wholly black; third joint somewhat orbicular in outline, scarcely pointed at tip. Lower orbital cilia whitish.

Thorax and scutellum dark blue, shining; pleurae green with white pollen. Abdomen shining green with black incisures, slight blue reflections and spots of white pollen on its sides. Hypopygium black with green reflections on basal portion; its lamellae (fig. 1) of moderate size, somewhat triangular or almost crescent shaped, broadly rounded on outer edge, brownish with black border at apex, jagged and bristly below at apex, otherwise the apical border is fringed with black hairs.

Coxae, legs and feet black; anterior coxae with white pollen on the front side and little black hairs. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with black hairs, the longest of which are about as long as the width of the femora; knees scarcely yellow. Tarsi wholly black; anterior pair plain, but little if any longer than their tibiae, fourth joint shortest, third and fifth joints of somewhat equal length; middle basitarsus without a bristle above. Calypters and halteres yellow, the former with black cilia.

Wings nearly hyaline; costa with a small knotlike enlargement at tip of first vein; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent.

Redescribed from the single type specimen in the American Museum in New York, taken at Chicago, Illinois, May 8, 1896.

No. 2. DOLICHOPUS MONTICOLA, new species.

Male.—Length, 4 mm.; of wing, 3.5 mm. Face of moderate width, ocher yellow above, becoming white below. Front green, shining. Antennae (fig. 2*a*) wholly black; third joint about as long as wide, somewhat orbicular in outline, still pointed at tip, proboscis and palpi black, orbital cilia wholly black.

Thorax green with blue or sometimes bronze reflections, a little dulled with brownish pollen, which is almost invisible when viewed from above; pleurae more black with gray pollen. Abdomen green with slight bronze reflections and narrow black incisures; the white pollen on its sides rather abundant. Hypopygium black, its lamellae of moderate size, somewhat triangular in outline, but rounded apically, whitish with broad black border, fringed with fine brown hairs on apical portion, a little jagged at lower corner.

Coxae, legs, and feet wholly black, the articulations of the femora and tibiae narrowly brownish yellow. Fore coxae covered with white pollen and little black hairs on their anterior surface. Middle and hind femora each with one preapical bristle, the latter not ciliate, but with very minute, delicate brown hairs on lower inner edge. Hind tibiae gradually thickened apically; the glabrous stripe on upper edge may be seen for nearly their whole length as a narrow shining line between the two rows of large bristles. Fore tarsi plain, not longer than their tibiae; the basitarsi nearly as long as the remaining four joints taken together; fourth joint slightly shorter than fifth, which is about as long as the third; middle and hind tarsi each a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 2) dark grayish, strongly tinged with brown in front of third vein, sometimes back to the fifth, except beyond the cross vein, where it is grayish; cross vein slightly bordered with brown; costa not enlarged at tip of first vein; last section of fourth vein bent just before its middle; hind margin of wing not indented at tip of fifth vein, evenly rounded, the anal angle being nearly obsolete.

Female.—Face broad, about half as wide as long; wings darker than in the male; otherwise about as in the male.

Described from 11 males and 9 females, taken on Mount Constitution, Washington, July 7–17, by J. M. Aldrich; and 1 male taken at

Bear Lake, British Columbia, July 20, by R. P. Currie, in the United States National Museum collection.

Type and allotype in the National Museum, from Mount Constitution, Washington.

Type.—Male, Cat. No. 22977, U.S.N.M.

No. 3. DOLICHOPUS BARBARICUS, new species.

Male.—Length, 4 mm.; of wing the same. Face rather wide, white a little tinged with brownish below the antennae. Front green, not very shining. Antennae (fig. 3*a*) wholly black; third joint small, nearly round, but a little flattened in outline at tip. Proboscis and palpi dark yellowish brown. Orbital cilia wholly black.

Thorax green with bronze reflections, not very shining. Pleurae more blackish, dulled with gray pollen. Abdomen green with coppery reflections. Hypopygium black; its lamellae not very large, somewhat triangular in outline, but rounded on lower and apical edges, black, fringed on apical edge with black hairs, not or but little jagged on apical border.

Coxae, femora, tibiae and tarsi black, knees very slightly yellowish. Fore coxae with white pollen and black hairs on their anterior surface, these hairs longer than in many species. Middle and hind femora each with two preapical bristles, placed one before the other; the latter not ciliate, but with a row of delicate hairs on lower inner edge, which become longer toward the tip of the femora. Hind tibiae gradually a little thickened toward their tips, middle of their inner side yellowish and with very short hair. Fore tarsi a little longer than their tibiae; first joint nearly as long as the remaining four joints taken together; fifth joint fully as long as the fourth. Middle and hind tarsi each about one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 3) grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent near its basal third; hind margin of wing scarcely indented at tip of fifth vein, nearly evenly rounded, but the anal angle a little prominent.

Described from 2 males from Colorado.

Type in United States National Museum. Paratype in the Cornell University collection.

Type.—Male, Cat. No. 22978, U.S.N.M.

No. 4. DOLICHOPUS SORDIDATUS, new species.

Male.—Length 4.5 mm. Face very broad, its pollen grayish white, the black ground color showing through a little in the type specimen. Front green with blue reflections. Antennae wholly black; third joint a little longer than wide, obtusely pointed at tip; arista a little longer than the antennae, lower half of the orbital cilia pale.

Thorax dark green, slightly dulled with an almost invisible brown pollen; pleurae with grayish pollen. Abdomen dark green with a little white pollen along its sides. Hypopygium black, its lamellae (fig. 4*a*) yellowish at base, becoming black near their middle, somewhat triangular in outline, but rounded apically, scarcely jagged at upper corner, fringed on apical border with short, delicate, little hairs.

Legs wholly black. Fore coxae with black hairs on their anterior surface. Middle and hind femora each with one preapical bristle, the latter without cilia below. Hind tibiae only a little thickened, their bristles long. All tarsi a little longer than their tibiae; middle tibiae with a large bristle below; middle basitarsus without a bristle; fore tarsi plain, the first joint about as long as the three following taken together, the fifth joint appears to be a little yellowish. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 4) dark grayish; costa scarcely thickened at tip of fifth vein; last section of fourth vein bent a little before its middle; hind margin of wing not indented at tip of fifth vein, almost evenly rounded; anal angle rounded but rather prominent.

Female.—Agrees with the male, except that the third antennal joint is a little shorter and the hind tibiae a little more slender. The face is nearly the same width as in the male and of the same sordid white color; wings as in the male.

Described from 1 pair taken by J. M. Aldrich in Idaho.

Type, a male taken at Oxford; allotype, a female taken at Soda Springs; both in the United States National Museum.

Type.—Male, Cat. No. 22979, U.S.N.M.

No. 5. DOLICHOPUS FORMOSUS, new species.

Male.—Length 4 mm.; of wing 3.5 mm. Face rather narrow, bright silvery white, a little narrowed below. Antennae wholly black; third joint not much longer than wide, somewhat rounded at tip, evenly rounded below; front shining green; lower orbital cilia silvery white.

Thorax dark shining green with blue reflections, or wholly blue; pleurae dulled with white pollen. Abdomen dark green with black incisures and a little white pollen along its sides. Hypopygium black; its lamellae (fig. 5*a*) of moderate size but rather long, somewhat triangular, tapering into the stem, but rounded at apex, whitish with a black border of moderate width, not at all jagged, fringed with delicate little hairs which are brown except on lower part of the stem.

Coxae, legs and feet wholly black; femora with green reflections; knees slightly yellowish. Fore coxae with black hairs on their front surface. Middle and hind femora each with one preapical bristle, the latter not ciliate below. Hind tibiae but little thickened. Fore tarsi scarcely as long as their tibiae; second to fifth joints of about equal length and taken together a little longer than the first joint. Middle tarsi a little longer than their tibiae, their basitarsus without a bristle. Calypters yellow, their cilia black. Knobs of halteres yellow, their stems brown.

Wings (fig. 5) grayish; costa not thickened at tip of first vein; last section of fourth vein a little bent beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein; wings narrowed toward their bases, with the anal angle scarcely at all developed, leaving the sixth vein close to the wing margin.

Described from 2 males taken at Three Rivers, California, received by J. M. Aldrich from C. F. Baker.

Type.—Male, Cat. No. 22980, U.S.N.M.

No. 6. DOLICHOPUS SQUAMOSUS, new species.

Male.—Length 3.5 mm.; of wing 3 mm. Face rather wide, reaching the lower corner of the eye, rounded below, its sides nearly parallel, silvery white. Front dark shining green, the silvery pollen of the face extending above the antennae along the inner orbits more than half way to the vertex, sometimes covering nearly the whole lower half of the front. Antennae wholly black; first joint rather long; third scarcely longer than wide, rounded at tip, oval in outline. The black orbital cilia descending to about the middle of the eye, the lower cilia being silvery white, flattened, scale-like.

Thorax dark shining green; pleurae scarcely dulled, still with a little almost invisible brownish gray pollen. Abdomen dark shining green, usually with coppery reflections on the apical portion; one specimen has blue reflections on the sides at base; I can not see any pollen on the abdomen. Hypopygium black; its lamellae rather large, somewhat triangular in outline, but broadly rounded on upper angle at apex, yellowish white with a black border, which is narrow on apical portion and wider on the rounded upper edge, jagged and bristly at apex, closely fringed above, sparsely below, with delicate hairs.

Coxae, legs and feet black; femora with slight green reflections; extreme tips of coxae and knees yellowish brown. Fore coxae with white pollen and very minute white hairs on anterior surface. Middle and hind femora each with one preapical bristle, the latter bare below, above with rather long hair. Hind tibiae very little stouter than the anterior pairs, without a glabrous stripe above. Fore tarsi plain, rather stout, scarcely longer than their tibiae; first joint as long as the three succeeding joints taken together; third and fifth joints of nearly equal length, fourth a little shorter, second only about one third as long as first. Middle tarsi (fig. 6*a*) one and a fourth times as long as their tibiae, a little compressed and widened, being widest at second joint. Hind tarsi a little longer than their tibiae. Calypters, their cilia, and the halteres yellow.

Wings (fig. 6) grayish with a faint brown clouding from the costa to the third vein, and from the tip of first vein to tip of third, more distinct in some specimens than in others; costa not enlarged at tip of first vein; last section of fourth vein bent near its middle; hind margin of wing not indented at tip of fifth vein; anal angle of wing nearly obsolete, the wing being narrowed toward the root.

Female.—Agrees with the male in color, form of antennae, legs and wings, except that the middle tarsi are shorter and less flattened and the anal angle of wing a little more prominent. The face is a little wider and the lower orbital cilia are but little flattened.

Described from 12 males and 3 females. J. M. Aldrich took 3 males and 3 females at Hagerman, Idaho, July 1, 1900, and 7 males at Wells, Nevada, July 12, 1911. C. L. Fox took 1 male at Olancha, Inyo County, California. I took 1 male at Great Salt Lake, Utah, June 8, 1915.

Type.—Male, Cat. No. 22981, U.S.N.M., from Hagerman, Idaho.

No. 7. DOLICHOPUS VIRIDIS, new species.

Male.—Length 3.5 mm.; of wing the same. Face rather wide, long, rounded below, silvery white. Front dark shining green. Antennæ (fig. 7*a*) wholly black; third joint longer than wide, oval. Lower orbital cilia silvery white, the lowest ones much flattened; the black cilia not descending to the middle of the eye.

Thorax dark blue-green, sometimes almost black-green, very shining; pleurae dulled with a little gray pollen. Abdomen colored about like the thorax. Hypopygium black, its lamellae small, somewhat triangular in outline, whitish with a black apical border, which is widest at upper and lower corners, a little jagged at lower corner, fringed with delicate dark hairs.

Coxae, legs and feet black, extreme tips of coxae and knees a little yellowish. Fore coxae with white pollen. Middle and hind femora each with one preapical bristle, the latter not ciliate below. Hind tibiae only a little stouter than the others. Fore tarsi plain, about one and a fourth times as long as their tibiae; first joint as long as the following three taken together; second nearly half as long as first, fourth and fifth of nearly equal length; each joint of the tarsi a little narrowed at base. Middle tarsi only a little longer than their tibiae, their basitarsus without a bristle. Calypters and halteres yellow, the former with white cilia.

Wings (fig. 7) a little tinged with brown, sometimes much so on the costal edge and along the veins; costa much enlarged from the tip of the first vein two-thirds of the way to the root of the wing, filling in the angle between the costa and the first vein but not extending beyond its tip; last section of fourth vein bent at its middle; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Female.—Face a little wider, silvery white; orbital cilia yellowish white; the pollen of the face not extending above the antennae; thorax and abdomen very bright shining green with some coppery reflections on the latter; calypters with white pollen.

Described from 1 pair taken at Oxford, Idaho, by J. M. Aldrich, and 1 male taken at Bozeman, Montana, June 25, 1900, by E. Koch, at an elevation of 4,800 feet.

Type.—Male, Cat. No. 22982, U.S.N.M., from Oxford, Idaho.

The male of this form differs from *squamosus* in having the lamellae of the hypopygium very much smaller, the face a little wider and much shorter, and its pollen not extending above the antennae as in that species. The female of *viridis* differs from that of *squamosus* in having the silvery pollen of the face end at the antennae; in *squamosus* it extends widely and conspicuously along the orbits nearly to the vertex.

No. 8. DOLICHOPUS NIGRIMANUS, new species.

Male.—Length 3.75 mm.; of wing 3.25 mm. Face of moderate width, a little narrowed below, silvery white. Front dark green. Antennae wholly black; third joint small, about as long as wide, somewhat orbicular in outline but a little pointed at tip. Lateral and inferior orbital cilia white, about six of the upper cilia on each side black.

Thorax dark shining green; pleurae dulled with gray pollen.

Abdomen green with the hind margins of the segments black, sometimes there are coppery reflections before the black margins; the white pollen on its sides not abundant. Hypopygium black; its lamellae (fig. 8*a*) moderately large, somewhat triangular in outline, but rounded at tip, white with a rather narrow black border on the apical margin, which is jagged and bristly.

Coxae, legs, and feet black, knees only a little yellowish. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Posterior tibiae thickened, especially toward their tips. Fore tarsi a little longer than their tibiae; first joint nearly as long as the remaining four joints taken together, second joint nearly as long as third and fourth taken together, the third being about two-thirds and the fourth one-third as long as the second. Middle tarsi a little longer than their tibiae, their basitarsus being without a bristle above. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 8) grayish, tinged with brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein bent near its middle; third vein bent backward at tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle not prominent, the wing being narrowed toward the root.

Female.—A female taken at the same time as one of the males has the face wider, silvery white; the extreme tip of the fore tibiae are yellow; the second and third joints of the fore tarsi are nearer of a length than in the male, still the second is a little the longest; wings grayish and a little wider; anal angle rounded and not at all prominent.

Described from 2 males and 1 female from Idaho; 1 pair were taken at Bovill, June 17, 1911; the other male at Moscow Mountain July 7, 1918. All 3 specimens were taken by A. L. Melander.

Type from Moscow Mountain; allotype from Bovill; both are in the collection of A. L. Melander.

No. 9. DOLICHOPUS NIGRICAUDA, new species.

Male.—Length 5 mm.; of wing 4–4.3 mm. Face nearly as wide as the front, silvery white, a little yellowish just below the antennae. Front shining green with blue or coppery reflections. Antennae wholly black; third joint small, about as long as wide, a little pointed at tip. Lower orbital cilia silvery white, the lower cilia flattened, scale-like, the black cilia reaching down to about the middle of the eye.

Thorax green with blue and bronze reflections, shining; pleurae a little dulled with white pollen.

Abdomen green with blue and bronze reflections, usually the apical segments more coppery, very bright and shining, no white pollen on its sides. Hypopygium black; its lamellae (fig. 9*a*) large, nearly as long as the hypopygium, the wide central portion a little longer than wide, somewhat orbicular, with the narrow stem at base and a narrow rounded projection at apex fringed with long blackish hairs, which are longest at tip of the projection.

Coxae, legs, and feet black, knees a very little yellowish. Fore coxae covered with silvery pollen and with a few minute white hairs on the anterior surface. Middle and hind femora each with one preapical bristle, the latter without cilia below. Hind tibiae a little thickened, the glabrous stripe on upper surface can be seen as a shining line between the rows of large bristles. Fore tarsi a little longer than their tibiae, plain, the first joint scarcely as long as the three following joints taken together. Middle tarsi one and a third and hind tarsi one and a half times as long as their tibiae. Calypters, their cilia and the halteres yellow.

Wings (fig. 9) grayish; costa scarcely enlarged at tip of first vein, but when viewed from in front it shows a little flattening of the costa with a little bristle-like point at outer end on the lower surface of wing; last section of fourth vein considerably bent at its middle;

hind margin of wing scarcely indented at tip of fifth vein and nearly evenly rounded, the anal angle not being much developed.

Female.—The above description is true of the female in all points outside of the hypopygium, except that the costa has no enlargement at tip of first vein and the hind tibiae are scarcely at all thickened, they are not very much so in the male. The face is the same width as in the male and has the same silvery pollen.

Described from 5 males and 12 females taken by J. M. Aldrich, Hazen, Nevada, July 13, both at shore of Soda Lakes and at fresh-water seepage near by; Market Lake, Idaho, and Longmire's Springs, Mount Rainier, Washington, Aug. 2. There is 1 pair from Colorado in the United States National Museum, collector unknown.

Type and allotype from Colorado and in the United States National Museum.

Type.—Male, Cat. No. 22983, U.S.N.M.

No. 10. DOLICHOPUS OVATUS Loew.

Dolichopus ovatus, LOEW, Neue Beitr., vol. 8, 1861, p. 13; Mon. of N. Amer. Diptera, pt. 2, 1864, p. 35.—OSTEN SACKEN, Cat. of N. Amer. Diptera, 1878, p. 108.

Male.—Length 4 mm.; of wing the same. Face very narrow, silvery white. Front rather narrow, shining green. Antennae (fig. 10*a*) wholly black; third joint nearly orbicular in outline, a little pointed at tip, lateral and inferior orbital cilia white, the black cilia descending about one-third the eye height.

Thorax dark shining green with slight bronze reflections on the anterior edge of the dorsum; pleurae dulled with whitish pollen.

Abdomen green with coppery reflections. Hypopygium black; its lamellae (fig. 10) rather small, somewhat triangular in outline, but rounded on upper corner; white with a narrow black border on apical margin, jagged and bristly on the lower corner, otherwise the outer margin is fringed with little dark hairs.

Coxae, legs, and feet black; knees, tips of fore and middle coxae and extreme bases of fore and middle basitarsi yellowish. Fore coxae with white pollen and minute black hairs on the anterior surface. Middle and hind femora each with one preapical bristle, the latter without cilia below. Hind tibiae scarcely thicker than the others, the glabrous stripe on their upper surface can be seen as a shining line between the rows of large bristles. Fore tarsi scarcely as long as their tibiae, the first joint being as long as the remaining four taken together, third and fourth joints scarcely as long as broad. Middle and hind tarsi slightly longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings a little grayish; costa not thickened at tip of first vein; bend in last section of fourth vein just beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded, the anal angle being nearly obsolete.

Female.—Face wider than in the male, still not very wide for a female, silvery white; middle tibiae with one bristle below and their basitarsi without a bristle above; the third and fourth veins are convergent as in the male.

Redescribed from 7 males from the following locations: Lake Mills, Wisconsin, Aug.; Big Stone, South Dakota, Aug. (Aldrich); Ithaca, New York, May 19; Lewiston, New York, Aug. 1; Fort Erie, Ontario, June 9 (Van Duzee). Osten Sacken reports it from Illinois.

Type locality.—"Middle States."

No. 11. DOLICHOPUS MYOSOTA Osten Sacken.

Dolichopus myosota, Osten Sacken, Biologia Centrali Americana, Diptera, vol. 1, 1887, p. 213.—Melander and Brues, Biological Bulletin, vol. 1, 1900, p. 148.

Male.—Length 4 mm.; of wing 3.5 mm. Face very narrow, silvery white. Front dark but shining green. Antennae wholly black; third joint but little longer than wide, oval but rather pointed at tip, lower orbital cilia white, the lower ones a very little flattened, the black cilia descending nearly to the middle of the eye hight.

Thorax and abdomen dark shining green with blue reflections, sometimes also with a little bronze on the fore part of the dorsum; pleurae and sides of the abdomen dulled with white pollen. Hypopygium black; its lamellae (fig. 11*a*) small, triangular, rather truncate at apex, white with very narrow black border on apical margin, scarcely jagged at lower corner, fringed on apical margin with delicate hairs.

Coxae, legs and feet black, knees a very little yellowish. Fore coxae with white pollen and with little black hairs on inner half, and white hairs on outer half of their anterior surface. Middle and hind femora each with one preapical bristle; the latter with a row of dark hairs on lower inner edge, these hairs scarcely long enough to call cilia. All femora usually tinged with green. Posterior tibiae thickened, especially at tip, with rather long hair on inner side. Fore tarsi about equal to their tibiae in length, first joint about as long as the remaining four taken together. Middle and hind tarsi distinctly longer than their tibiae, middle basitarsus without a bristle above. Calypters and halteres yellow, the former with black cilia.

Wings slightly grayish (fig. 11) darker in front of second vein; costa not enlarged at tip of first vein; last section of fourth vein bent just before its middle; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded, the anal angle being obsolete.

Female.—Face as wide as the front, its pollen white; third antenna joint not as long as wide; orbital cilia not at all flattened; hairs of the fore coxae all black; hind femora without a row of hairs below; hind tibiae not thickened. It agrees with the male in color, the wing venation, and in the middle tibiae having one bristle below and middle basitarsi being without a bristle above.

Redescribed from 8 males and 14 females taken by J. M. Aldrich: Kendrick, Idaho, May 25; St. Anthony, Idaho, June 16; and Wells, Nevada, July 16; and 1 female from Rainier, Washington, Aug. 30, at an elevation of 5,000 feet. I took 3 females in San Diego County, California, on the edge of the desert, Apr. 15.

Type locality.—Northern Sonora, Mexico. Melander and Brues report it from California. Type in British Museum; the identification is from the description only.

The males of *ovatus*, *acuminatus*, *myosota*, and *nigrimanus* are very much alike but they differ in the formation of the lamellae of the hypopygium; *myosota* has the lamellae small and truncate at apex; *ovatus* and *nigrimanus* have them rounded at apex, those of the former are smaller and less rounded than those of the latter; *acuminatus* has the lamellae long and acutely pointed at tip.

The female of *ovatus* has the third and fourth veins more convergent than those of *acuminatus*, the fore tibiae and fore and middle basitarsi of the former are less yellowish, but the females of the two species are not easily separated. The females of *myosota* and *nigrimanus* differ from the two species mentioned above in having the legs and feet wholly deep black, except that the knees may be a very little yellowish. They differ from each other in that *myosota* has third and fourth veins nearly parallel beyond the bend in fourth vein, while in *nigrimanus* they are more convergent; the two last are western and the former two are eastern species. The female of *adaequatus* ought to be mentioned here as it is very much like those mentioned above, except that it has two bristles below on the middle tibiae.

No. 12. DOLICHOPUS MULTISETOSUS, new species.

Male.—Length 3.5–4.25 mm.; of wing 3.5–4 mm. Face rather wide, silvery white, narrowed a little below. Front shining green, sometimes with bronze reflections. Antennae wholly black, third joint nearly orbicular in outline, but the notch where the arista is inserted makes the tip somewhat pointed. Lower orbital cilia glistening white, those near the proboscis a little flattened, scale-like, the black cilia descend about one-fourth of the eye height.

Thorax dark shining green, sometimes with bronze reflections; pleurae black, dulled with gray pollen.

Abdomen green with black incisures and coppery reflections, especially on the apical segments. Hypopygium black; its lamellae (fig. 12*a*) moderately small, somewhat triangular in outline, but with the outer edge rounded, whitish with rather wide black border on apical margin, where it is fringed with delicate dark hairs, a little jagged and bristly on lower corner.

Coxae, legs, and feet wholly black, fore coxae with white pollen and little black hairs on their anterior surface. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Hind tibiae thickened toward their tips; the glabrous stripe on their upper surface can be seen as a shining line between the rows of bristles, which are rather large, about eight in each row. Fore tarsi nearly one and one-fourth times as long as their tibiae. First joint as long as the three following taken together. Middle tarsi one and a third times as long as their tibiae and hind tarsi one and a fourth times; posterior basitarsi with about 12 large bristles. Calypters and halteres yellow, the former with black cilia below and numerous pale hairs or cilia above.

Wings (fig. 12) grayish, tinged with brown in front of second vein, sometimes the brown tint extends to the third vein; costa not enlarged at tip of first vein; fourth vein with the last section considerably bent near its middle; hind margin of wing a little indented at tip of fifth vein; the anal angle but little developed, rounded.

Females.—Face wide as the front, grayish brown; hind basitarsi with only a few bristles as usual; otherwise as in the male Middle tibiae with one bristle below and their basitarsi with a large bristle above.

Described from several males and females. J. M. Aldrich took it at Tennessee Pass, Colorado, July 25; Johnson took it at Pine Lake, Southern California; and E. P. Van Duzee took it at Tahoe, California, June 24, and at Huntington Lake, Fresno County, California, July 5–14, at 7,000 feet elevation.

Holotype and allotype in the National Museum, and taken at Tahoe, California.

Type—Male, Cat. No. 22984, U.S.N.M., from Colorado.

No. 13. DOLICHOPUS KANSENSIS Aldrich.

Dolichopus kansensis Aldrich, Kansas Univ. Quart., 1893, vol. 2, p. 8.

The original description is as follows:

> Dark green, feet black, cilia of inferior orbit white, face wide. Face and lower part of the front yellow pollinose, remainder of front dark green. Antennae black, third joint only moderately large, with a short arista. Dorsum of thorax dark green, pleurae black with but little dust. Tegulae [calypters] yellow with black cilia, halteres yellow. Abdomen dark green, toward the tip more black-green. Hypopygium black, the lamellae rounded, whitish with a rather wide black border and small bristles. Legs from coxae to tarsi wholly black, at the knees with the faintest trace of red. Fore tarsi over one and one-half times the length of the tibiae, middle tarsi about one and one-fourth times. Hind tibiae incrassated; hind femora below with delicate blackish cilia of moderate length, wings almost hyaline; costa slightly thick-

ened; last segment of fourth vein as in the figure of *Hygroceleuthus ciliatus.* Length 4.2 mm.; of wing 3.8 mm.

One male, Kansas. Type in the University of Kansas.

Resembles *D. ovatus*, but has wider face, shorter and weaker cilia on hind femora, and the fore tarsi nearly twice as long.

Copy of original description; type not seen.

No. 14. DOLICHOPUS DETERSUS Loew.

Dolichopus detersus, Loew, Cent., vol. 7, No. 79, 1866.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 8.—Melander and Brues, Biological Bulletin, vol. 1, 1900, p. 148.

Male.—Length 4.5–5 mm.; of wing 4 mm. Face rather wide, silvery white. Front shining green. Antennae wholly black; third joint almost orbicular in outline, but a little pointed at tip. Inferior orbital cilia white, the black cilia reaching nearly to the middle of the eye height.

Thorax bright green, shining but dark; pleurae a little dulled with gray pollen. Abdomen dark shining green with black incisures. Hypopygium black; its lamellae (fig. 14*a*) rather large, somewhat triangular in outline, but rounded on apical margin, blackish, fringed with little hairs, jagged and bristly at tip.

Coxae, legs, and feet black; knees a little yellowish; fore coxae with white pollen and little black hairs on anterior surface. Middle and hind femora each with one preapical bristle, the latter ciliate on lower inner edge with long black hairs, the longest of which are a little longer than the width of the femora. Posterior tibiae a little thickened, more so toward their tips; the glabrous stripe on upper surface wide, including the inner row of large bristles. Fore tarsi as long as their tibiae; the first joint being about as long as the remaining four joints taken together. Middle tarsi about as long as their tibiae, hind ones one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 14) a little grayish; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, but just before its tip the margin has a small lobe, which forms a shallow sinus between the tip of fifth and sixth veins; anal angle rather prominent.

Female.—Face wide, rather silvery; hind femora without cilia; hind tibiae not thickened; costa without enlargement. Middle tibiae with one bristle below and their basitarsi without a bristle above. The wing has a slight, but distinct, outward wave or lobe before the tip of fifth vein as in the male, but much less prominent.

Redescribed from 7 males and 11 females from the following locations: St. Anthony Park, Minnesota; Battle Creek, Michigan (Aldrich); Milwaukee, Wisconsin, June 28 (Wheeler); Buffalo, New

York, Aug. 8; Toronto, Ontario, July 3 (Van Duzee); Montreal, Quebec, Aug. 6.

Type locality.—Saratoga, New York. Aldrich reports it from Minnesota and South Dakota; Melander and Brues from Illinois.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts; has been examined.

No. 15. DOLICHOPUS ENIGMA Melander and Brues.

Dolichopus enigma Melander and Brues, Biol. Bull., vol. 1, 1900, p. 139, fig.

Male.—Length 4–5.2 mm.; of wing the same. Face rather broad but short, silvery white, appearing dark gray in most lights. Front shining green. Antennae (fig. 15*b*) wholly black; third joint a little longer than wide, somewhat conical in outline, scarcely pointed at tip. Lower orbital cilia white; the black cilia descending about one-third of the eye height.

Thorax shining green, sometimes with bronze reflections; pleurae a little dulled with gray pollen. Abdomen green with very slight bronze reflections. Hypopygium black; its lamellae (fig. 15*a*) moderately large, quadrangular in outline but the stem placed close to the lower corner, yellowish white with a black border, which is widest on apical margin, jagged and bristly at apex, its sides fringed with little hairs.

Coxae, legs, and feet black, the knees scarcely yellowish. Fore coxae with white pollen and minute black hairs on their anterior surface. Middle and hind femora each with one preapical bristle, the latter ciliate with pale hairs on lower inner edge of apical half, which are nearly as long as the width of femora (easily overlooked); hind tibiae only slightly thicker than the others, the glabrous stripe on upper edge can be seen as a shining line between the rows of large bristles. Fore and middle tarsi a little longer than their tibiae. Third and fifth joints of fore tarsi of nearly equal length, fourth a little shorter. Middle tibiae with one bristle below, their basitarsi without a bristle. Hind tarsi one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia, which appears more or less pale in certain lights, in the type specimen it is almost white.

Wings (fig. 15) grayish, a little darker in front; costa with a very small knot-like enlargement at tip of first vein; last section of fourth vein bent just beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle rounded, only a little prominent.

Redescribed from the 1 male type in the American Museum at New York, taken at North Park, Colorado, at 9,000 feet elevation in July; and 4 males taken by J. M. Aldrich, at Marshall Pass, Colorado, July 28, at 10,856 feet elevation.

No. 16. DOLICHOPUS ADAEQUATUS, new species.

Male.—Length 4 mm.; of wing the same. Face wide, covered with dark brown pollen, which is coarse and somewhat yellow in some individuals. Front shining green. Antennae (fig. 16*b*) wholly black; third joint slightly longer than wide, oval, rounded at tip. Lower orbital cilia whitish; the black cilia descend about one-third of the eye height.

Thorax green, not very dark or bright, but shining and with blue or bronze reflections; pleurae dulled with white pollen. Abdomen shining green with coppery reflections, especially toward its apex, sometimes with blue reflections on the basal segments. Hypopygium black; its lamellae (fig. 16*a*) moderately large, somewhat triangular, white with rather wide black border on the rounded apical margin, which is jagged and bristly, their upper and lower edges fringed with delicate brown hairs.

Coxae, legs and feet wholly black. Fore coxae with conspicuous little black hairs and white pollen on the anterior surface. Middle and hind femora each with two preapical bristles, placed one before the other, the latter ciliated with brown hairs on lower inner edge of their center, the longest of these hairs about three-fourths as long as width of femora. Hind tibiae thickened, upper side with the bristles in the usual two rows large, about six in each row, the glabrous stripe between them distinct and widely extending upon the inner side of tibia on its basal half, lower side with a row of bristlelike hairs of somewhat unequal length and ending in one large bristle a little distance before the tip. Fore tarsi about one and a fourth times as long as their tibiae, the first joint a little longer than the two succeeding joints taken together, fourth joint slightly shorter than the fifth. Middle tarsi one and a fourth, hind tarsi one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 16) grayish; costa not or scarcely enlarged at tip of first vein; last section of fourth vein a little bent at its middle; hind margin of wing a little indented at tip of fifth vein, evenly rounded, the anal angle being very little developed.

Female.—Face a little wider than in the male; hind femora not ciliate but with delicate little brown hairs on inner edge of apical half; hind tibiae not or scarcely thickened; front of wing a little brownish as far back as the third vein; otherwise about as in the male. The middle tibiae have one bristle below and their basitarsi are without a bristle above.

Described from 22 males and 9 females. J. M. Aldrich took 6 in Idaho, June 12–20; Baker took 1 in Colorado; I took 23 at Wells, Nevada, June 6, and 1 at Victor, Colorado, June 11, at 9,900 feet elevation. I found it quite abundant on marshy ground at Wells, Nevada.

Holotype and allotype in the United States National Museum, and taken at Wells, Nevada.

Type.—Male, No. 22985, U. S. N. M.

No. 17. DOLICHOPUS PALUSTER Melander and Brues.

Dolichopus paluster MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 136, figs.

Male.—Length 5–5.5 mm.; of wing 4.5–5 mm. Face wide, only a little narrowed below, covered with brown or yellowish-brown pollen. Front green, sometimes with bronze reflections. Antennae (fig. 17*a*) wholly black; third joint a little longer than wide, somewhat oval in outline. Proboscis and palpi black with black hairs, orbital cilia wholly black.

Thorax green, with indications of two coppery lines on the dorsum and sometimes blue reflections; pleurae more black with whitish pollen. Abdomen green with bronze and sometimes blue reflections, with scarcely a trace of white pollen on its sides. Hypopygium black; its lamellae of moderate size, oval, whitish with a sharply defined black border which is widest on apical margin and very narrow on lower edge, jagged and bristly at lower apical corner, fringed above with rather long but delicate brown hairs. Coxae, legs and feet black. Fore coxae with white pollen and black hairs on their anterior surface. Middle and hind femora each with two preapical bristles, placed one before the other; posterior pair ciliated with black hairs on lower inner edge; these hairs are brown or even whitish in same individuals and about three-fourths as long as the width of the femora. Middle tibiae with a long bristle below and one longer than the others beyond the middle on upper surface, hind tibiae thickened, with the glabrous stripe on upper surface quite distinct but narrow. Fore tarsi a little longer than their tibiae, the joints of decreasing length but the fifth not shorter than the fourth; first joint nearly as long as the three following taken together. Middle tarsi a little longer than their tibiae. Hind tarsi one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 17) gray, usually tinged with brown in front of the third or even back to the fourth vein, the veins often narrowly bordered with brown; costa with a very small enlargement at tip of first vein; last section of fourth vein moderately bent near its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle not prominent, but the wing rather wide at its middle.

Female.—Face as wide as the front; hind tibiae not thickened; hind femora with only very short, delicate hairs on lower inner edge;

wings more strongly tinged with brown; otherwise about as in the male. The middle basitarsi without a bristle above.

Redescribed from 12 males and 9 females. Pacific Grove, California, May 9 (J. M. Aldrich); Monterey, California, July 17, and Pine Lake, southern California (Johnson); Palo Alto, California, June 3 (M. C. V.); Hood River, Oregon, June 8 (Cole).

Type locality.—Monterey, California.

Type.—American Museum of Natural History; it has been examined.

No. 18. DOLICHOPUS TETRICUS Loew.

Dolichopus tetricus Loew, Mon. of N. Amer. Dipt., pt. 2, 1864, p. 33.

Male.—Length, 4.5 mm.; of wing, 4 mm. Face rather wide, a little narrowed below, yellowish gray. Front green. Antennae wholly black (Doctor Loew states that the third joint is "almost round, still with a sharp projection at tip." The third joint is now missing in the male type). Lateral and inferior orbital cilia yellowish white, a few of the upper cilia black.

Thorax and abdomen dark green, the latter with coppery reflections. Hypopygium black; its lamellae of moderate size, elliptical in outline, whitish with a black border on apical and upper margins, jagged and bristly at apex.

Coxae black, anterior pair with black hairs and a very little white pollen on their front surface; femora and tibiae black. Fore and middle femora with apical third, hind ones with apical fourth yellow. Middle and hind femora each with one preapical bristle, the latter ciliated for nearly their whole length on lower inner edge with blackish hairs, the longest of which are about as long as the width of the femora. All tibiae yellowish at extreme base; posterior pair distinctly but not greatly thickened, but a little more so at tip; when viewed in the right direction they appear a little narrowed in the middle. Fore tarsi (fig. 18) a little longer than their tibiae; their basitarsi black, except at extreme tip, which is yellowish, about as long as the two following joints taken together; second and third joints yellowish; fourth black, a little more than half as long as third, perhaps very slightly compressed but scarcely so; fifth joint black, compressed, about as long as third and nearly as wide at tip as long, somewhat obcordate. Middle tarsi about one and a fourth times as long as their tibiae, the first joint more than half as long as the tibiae and with a large bristle near apical fourth. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa not at all enlarged at tip of first vein; last section of fourth vein considerably bent near its middle; third vein bent backward a little toward its tip; hind margin rather evenly rounded, not indented at tip of fifth vein; anal angle rather prominent.

Female.—Face wider and whiter than in the male; wing and antennae as in the male, the third joint of the latter being as described by Loew and rather large for a female; fore tarsi plain, fifth joint slightly longer than the fourth, the second and third joints yellowish as in the male; wings as in the male.

Redescribed from the type specimens, 1 male and 1 female from the Hudson Bay Territory.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 19. DOLICHOPUS MANICULA, new species.

Male.—Length, 4–5 mm.; of wing 4–4.25 mm. Face wide, ocher yellow or brownish, a little glistening, in one specimen more grayish. Front shining green with bronze reflections, sometimes altogether bronze colored. Antennae wholly black; third joint only a little longer than wide, somewhat acorn shaped with the arista inserted near the base. Proboscis and palpi black. Orbital cilia wholly black.

Thorax blackish green or bronze brown; dorsum dulled with almost invisible brown pollen; pleurae more black with gray pollen. Abdomen green with coppery reflections. Hypopygium black; its lamellae rather large, somewhat elliptical in outline, whitish or tinged with brown with wide black border which shades into the disk, jagged and bristly at lower apical corner, otherwise fringed with little crooked hairs on upper and apical margins.

Coxae black, sometimes their tips yellow; anterior pair with white pollen and delicate little pale hairs on the front surface and the usual black bristles at tip. Femora black with their tips conspicuously yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with stiff black hairs, which are scarcely as long as the width of the femora. Tibiae black; hind tibiae thickened, especially at tip. Fore tarsi (fig. 19*a*) one and a fourth times as long as their tibiae; first joint black with extreme base and tip yellow, about as long as the three following joints taken together; second and third joints wholly yellowish, third a little shorter than the second; fourth black, slightly compressed, about as long as wide, about three-fourths as long as third; fifth joint black, longer than third, considerably compressed, as wide as long, bilobed at apex, the two lobes subequal; tips of first four joints covered with grayish-yellow pollen, which gives them a grayish color in certain lights. Middle tarsi wholly black, one and a fourth times as long as their tibiae. Hind tarsi one and a third times as long as their tibiae, wholly black. Calypters and halteres yellow, the latter with black cilia.

Wings (fig. 19) a little tinged with blackish gray; costa not enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing not indented at tip of fifth vein, not much widened in the middle, the wing being of somewhat equal width; anal angle of wing rather prominent.

Female.—Face as wide as the front, grayish white, more yellowish above; fore tarsi plain, black; hind femora with a row of rather long hairs on lower edge, but these hairs scarcely long enough to be called cilia; wings a little wider and more rounded on posterior edge; otherwise about as in the male. The middle tibiae with one large bristle on lower side and their basitarsi with a large bristle above.

Described from 8 males and about 20 females taken by J. M. Aldrich in Colorado, Tennessee Pass, July 25–26, and Marshall Pass, July 28, at 10,856 feet elevation; 2 males in the United States National Museum from Beulah, New Mexico, top of Las Vegas Range, June 28; and 1 male taken at the northwest entrance to Yellowstone Park, Wyoming, Aug. 3, by A. L. Melander.

Type.—Male, Cat. No. 22986, U.S.N.M., from Marshall Pass.

This species differs from *tetricus* Loew in having the orbital cilia wholly black, while in *tetricus* they are pale yellowish, except a few black above. The form and color of the fore tarsi of the two species are nearly alike, still there is a slight difference, but they could not be separated by the tarsi alone. The difference in the color of the orbital cilia makes it impossible to place them under one species. The females differ in the color of the fore tarsi, which are wholly black in *manicula*, while the second and third joints are yellowish in the female of *tetricus*.

No. 20. DOLICHOPUS CORAX Osten Sacken.

Dolichopus corax OSTEN SACKEN, Western Diptera, 1877, p. 314.

Male.—Length 5 mm.; of wing 4.5 mm. Face rather wide, a little narrowed below, dark satiny yellow, almost golden yellow. Front green. Antennae black, third joint more brownish, not longer than wide, somewhat conical in outline, scarcely pointed at tip. Orbital cilia wholly black.

Thorax dark green with yellowish pollen, which is almost invisible when viewed from above; pleurae with a little grayish pollen. Abdomen dark green. Hypopygium black; its lamellae moderately large, black, only a little yellowish at their base below, somewhat triangular in outline, but broadly rounded on apical margin, jagged and bristly at lower apical corner, otherwise fringed with little blackish hairs both above and below.

Coxae, legs, and feet black, fore tibiae becoming more or less yellowish toward their tips. Fore coxae covered with black hairs. Middle and hind femora each with one preapical bristle, the latter not ciliate; posterior tibiae thickened, their bristles strong, the usual glabrous stripe on upper surface between the bristles narrow, inside of the inner row of bristles is another glabrous stripe extending their entire length. Fore tarsi (fig. 20) one and a third times as long as their tibiae; first joint longer than the three following joints taken together and second joint longer than the two following; fourth joint shorter than third and a little wider; fifth much compressed and about equal to the second in length, somewhat round in outline, but a little wider at tip where it is rather truncate, on the inner side the fifth joint can be seen running across the expanded part about its normal size, at tip the upper part extends over the claws a little. Middle basitarsi with a large bristle above near its apical third. Calypters and halteres yellow, the former with black cilia.

Wings grayish, rather strongly tinged with brown in front of third vein, of rather parallel width, costa not enlarged at tip of first vein; last section of fourth vein bent before its middle, tip of third vein bent backward a little at tip; hind margin of wing a little indented at tip of fifth vein, there is a quite conspicuous sinus between the tips of fifth and sixth veins, anal angle prominent.

Female.—Face wide, gray, tinged a little with yellow; fore tibiae a little yellowish as in the male, fore tarsi plain, fifth joint longer than fourth; middle basitarsi with a large bristle above; wing as in the male, except that there is no sinus on hind margin, the wing being more evenly rounded.

Redescribed from the type material taken at Webber Lake, California, July 24-26; now in Museum of Comparative Zoology, Cambridge, Massachusetts.

A female taken by Edward P. Van Duzee at Grass Lake, Tahoe, California, June 24, 1915, seems to belong here and agrees with the type specimens, except that the fore tibiae are wholly black, not at all yellowish. Another female agreeing with this one was taken by R. P. Currie, at Kokanee Mountains, British Columbia, Aug. 10, 1903, at an elevation of 8,000 feet.

No. 21. DOLICHOPUS ACRICOLA, new species.

Male.—Length 4 mm.; of wing 3.5 mm. Face rather wide, yellowish brown. Front dark shining green. Antennae black, first joint conspicuously yellow below; third joint rather small, not much longer than wide, rounded at tip. Palpi yellowish with black hairs. Orbital cilia wholly black.

Thorax dark green, slightly dulled with brown pollen. Abdomen and hypopygium dark green with bronze reflections; lamellae of the latter moderately large, somewhat elliptical in outline but narrowed into the stem, about twice as long as wide, dark yellowish brown with a black border on apical margin, jagged and bristly at apex, fringed on both edges with delicate brown hairs.

Coxae, legs, and feet black, knees only a little paler. Fore coxae yellow (in one specimen only slightly reddish) on inner edge, covered with conspicous black hairs on anterior surface. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Posterior tibiae a little thickened, about five large bristles in each row on upper edge and a row of stiff hairs, in which are inserted five bristles of increasing length, below. Fore tarsi (fig. 21*a*) a little longer than their tibiae, the first four joints being equal to the tibiae in length; first joint as long as the three succeeding joints taken together, third a little shorter than the second, fourth slightly compressed, half as long as third, as wide as long; fifth compressed, scarcely as long as the second joint, somewhat oval in outline but widest near the tip, where it is rather truncate, but still a little rounded. Middle tarsi one and a fourth times as long as their tibiae, their basitarsi with a large bristle above at apical third. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 21) grayish, scarcely darker in front; costa slightly enlarged at tip of first vein; last section of fourth vein a little bent near its basal third, the distance of this bend from the cross-vein about equal to the length of that vein; third vein bent backward so as to approach the fourth at tip; hind margin of wing indented at tip of fifth vein and with a wide sinus between the fifth and sixth veins, so as to form a slight lobe back of fifth vein and another at tip of sixth vein; anal angle of wing prominent.

Female.—Face wider and more grayish brown than in the male; antennae and palpi about as in the male; the fore coxae seem to be altogether black and have the same rather long black hairs as the male; fore tarsi plain, still the fifth joint very slightly widened, as long as third, fourth distinctly shorter than third; middle tibiae with three bristles below their basitarsi, with a large bristle above.

Described from 3 males and 1 female, taken at Tuolumne Meadows, California, Aug. 8, 1916, at an elevation of 9,000 feet, and one male taken at Soda Springs, California, at 8,600 feet, by G. R. Pilate.

Type.—Male, Cat. No. 22987, U.S.N.M.

No. 22. DOLICHOPUS STENHAMMARI Zetterstedt.

Dolichopus stenhammari ZETTERSTEDT, Insecta Lapp., 1839, p. 710 (*annulipes*, preoc.); Diptera Scand., vol. 2, p. 521.—OSTEN SACKEN, Cat. N. Amer. Dipt., 1878, p. 108.—COQUILLETT, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 424.—ALDRICH, Cat. N. Amer. Diptera, 1905, p. 305.

Male.—Length 4.4–5 mm.; of wing 5–5.25 mm. Face wide with its sides nearly parallel, silvery white. Front dark green, somewhat dulled with brown pollen. Antennae wholly black; third joint a little longer than wide, somewhat pointed; arista a little longer than the antenna, inserted at about the middle of the third joint. Orbital cilia wholly black, rather long except a few near the proboscis which are shorter.

Thorax blackish with green reflections and dulled with brown pollen on the dorsum, which leaves ill defined, shining vittae; pleurae with grayish pollen. Abdomen dark green with black incisures and spots of white pollen on the sides of the segments. Hypopygium black; its lamellae (fig. 22*a*) rather large, somewhat elliptical in outline but truncate at apex, not quite twice as long as wide, dark yellowish or brownish, shading into a broad apical border of a blackish color (sometimes the lamellae are of a more whitish color), jagged and bristly at apex.

Coxae, legs, and feet black, trochanters and knees yellow. Fore coxae with black hairs. Middle tibiae with the middle third white and with five bristles below, their basitarsi white, narrowly black at tip, the white portion with silvery pollen on its anterior surface. Middle and hind femora each with one preapical bristle, the latter ciliated with black hairs, the longest of which are longer than the width of the femora, those near the base much shorter. Posterior tibiae a little thickened near the base and at tip, a little more slender in the middle, their bristles long. Fore tarsi fully one and a half times as long as their tibiae, their joints of decreasing length, first joint nearly as long as the three succeeding joints taken together. Middle tarsi one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 22) grayish; costa enlarged at tip of first vein, gradully tapering to its tip; last section of fourth vein a little bent near its middle, at this bend and on the cross-vein there is an almost imperceptible brown shade; hind margin of wing scarcely indented at tip of fifth vein; anal angle rounded.

Female.—Face wider than in the male; third antennal joint about as long as wide; fore and middle tarsi about one and a fourth times as long as their tibiae; white on middle tibiae and basitarsi usually more obscure; costa not enlarged at tip of first vein. Middle basitarsi with one bristle above and several smaller ones below; these are more prominent in the male.

Redescribed from several males and females from Alaska and Labrador: Sitka, Alaska, June 16, 1899, by T. Kincaid (Harriman Exped.); Caribou Island, Labrador, taken by Packard and in the Museum of Comparative Zoology in Cambridge, Massachusetts; Labrador, coll. of C. W. Johnson; Ungava Bay, Labrador, taken by L. M. Turner, on July 29; and one female Morrison took in the White Mountains, New Hampshire; all but the Packard material in the United States National Museum.

In some of the Labrador specimens the fore tibiae and basitarsi have the same white ring as the middle ones.

Type.—Believed to be in the University of Lund, Sweden.

No. 23. DOLICHOPUS ARGENTIPES, new species.

Male.—Length 5.5 mm.; of wing the same. Face wide, covered with brown pollen. Front green, the brown pollen of the face extends a little above the antennae and narrowly along the orbits. Antennae wholly black; third joint nearly one and a half times as long as wide, rounded at tip. Orbital cilia wholly black.

Thorax and abdomen dark green, rather shining; pleurae with gray pollen. The pollen of the abdomen more gray than white, rather abundant. Hypopygium black; its lamellae of moderate size, somewhat oval, but truncate at apex, dark brown without a distinct black border, jagged and bristly on apical margin, fringed above with long black hairs, below with a few short ones.

Coxae and femora black, knees scarcely paler. Fore and middle coxae with long black hairs on their anterior surface. Middle femora with two preapical bristles, placed very close together so as to appear almost like one; I can see but one preapical bristle on hind femora; middle and hind femora ciliated with black hairs below, those on the former shorter, those on the latter longer than the width of the femora. Fore and hind tibiae black, the latter thickened at basal third and at tip, becoming more slender between these points. Middle tibiae black with a white ring, which covers more than one-third their length and is not complete, the lower edge of the tibia being wholly black, the middle basitarsi are also white, with the base and tip narrowly black, the white ground color of the tibiae and tarsi is covered with silvery pollen. Fore tarsi about one and a fourth times as long as their tibiae, black, first joint with a slightly variable ring, which is not as dark as the rest of the joint. Middle tarsi about equal to their tibiae in length. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 23) grayish with a distinctly defined blackish tip, beginning at the tip of second vein; costa slightly enlarged at tip of first vein; last section of fourth vein a little bent at basal third; hind margin of wing indented at tip of fifth vein; anal angle not at all prominent.

Female.—Face as in the male, only slightly wider; third antennal joint shorter; legs and feet wholly black, without any trace of white on middle pair; middle and hind femora not ciliated; middle basitarsi without a bristle above, but with several small ones below; wings about as in the male, except that the cloud at tip is not as distinct, and the bend in the last section of fourth vein is a little nearer the middle.

Described from 2 males and 1 female, taken on Mount Rainier, in Paradise Valley, Washington, at an elevation of 8,000 feet, Aug. 3–5, 1919, by C. L. Fox.

The hairs of the coxae and legs although black appear to be yellow or white when viewed in certain lights, the bristles of hind tibiae may appear whitish at tip or black at base and tip while the center is white.

Type and allotype in the California Academy of Sciences.

No. 24. DOLICHOPUS ACUMINATUS Loew.

Dolichopus acuminatus Loew, Neue Beitr., vol. 8, 1861, p. 12; Mon. of N. Amer. Dipt., pt. 2, 1864, p. 34.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of N. J., 1909, p. 756.

Male.—Length 3–4 mm.; of wing 3 mm. Face narrow, silvery. Front dark shining green. Antennae (fig. 24*a*) wholly black; third joint only a little longer than wide, somewhat oval but with a little point at tip; lower orbital cilia white, the black cilia descend about one-third the eye height.

Thorax dark shining green; pleurae a little dulled with white pollen. Abdomen dark shining green with black incisures and a little white pollen on the lower edges of sides. Hypopygium black; its lamellae (fig. 24) large, nearly as long as the hypopygium, about three times as long as wide, acutely pointed at tip, white with a black border which is narrow on the upper and lower edges but becomes wider toward the tip, fringed with dark hairs on the edges.

Coxae, legs, and feet black, knees, extreme base of fore and middle tarsi and fore tibiae more or less, sometimes mostly yellowish. Fore coxae with very minute black hairs. Middle and hind femora each with one preapical bristle, the latter without cilia below. Posterior tibiae only slightly thickened; the glabrous stripe on the upper surface can be seen as a narrow shining line between the rows of bristles. Fore tarsi scarcely as long as their tibiae, the first joint about equal in length to the remaining four taken together. Middle and hind tarsi only a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa not thickened at tip of first vein; last section of fourth vein a little bent before its middle; hind margin not or scarcely indented at tip of fifth vein, evenly rounded, the anal angle not being much developed.

Female.—Face wider than in the male, silvery white; the third and fourth veins seem a little less convergent than in the male. Middle tibiae with one bristle below; their basitarsi without a bristle above.

Redescribed from many males and females taken at: Algonquin, Illinois, July 9; Battle Creek, Michigan (Aldrich); Socorro, New Mexico (Williston); Ithaca, New York, July; western New York, May–August.

Type locality.—District of Columbia and Illinois. Melander and Brues report it from Wisconsin. Insects of New Jersey from Westville, May 19, and Clementon, May 30.

No. 25. DOLICHOPUS BEATUS, new species.

Male.—Length 4.5 mm.; of wing the same. Face wide, silvery white. Front dark green, shining. Antennae black; third joint a little longer than wide, somewhat pointed at tip. Orbital cilia wholly black.

Thorax dark green, shining, but with traces of brown pollen on the front of the dorsum, which is visible only when viewed in certain directions; pleurae dulled with gray pollen. Abdomen dark green with coppery reflections on fourth and fifth segments and black incisures; there are only faint traces of white pollen on the lower part of the sides. Hypopygium (fig. 25) small, about the size of the fifth abdominal segment, black; its lamellae small, black, somewhat crescent shaped, their convex edge fringed with delicate hairs.

Coxae and femora black, their extreme tips yellow. Middle and hind femora each with two preapical bristles, placed one below the other, the lower one being a little nearer the base of the femora than the upper one. Fore tibiae and basal half of first tarsal joint yellow. Fore tarsi but little longer than their tibiae, infuscated from near the middle of the first joint (middle and hind tibiae missing). Calypters and halteres yellow, the former with black cilia.

Wings grayish, almost imperceptibly tinged with brown along the front; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent just beyond its basal third; hind margin of wing a little indented at tip of fifth vein; anal angle of wing rounded; tips of third and fourth veins not very close together.

Female.—Length 5 mm. Face gray, very wide; third antennal joint about as in the male only a little shorter; front dark green, sometimes with violet reflections at the vertex. Abdomen dark, almost blackish green; legs and feet black; anterior tibiae and basal half, sometimes the whole, of middle tibiae yellowish; front tarsi only a little paler at base; middle and hind femora each with two preapical bristles; wings as in the male. Middle tibiae with two bristles below; their basitarsi without a bristle above.

Described from 1 male and six females taken on Craig's Mountain, Idaho, by J. M. Aldrich.

Type.—Male, Cat. No. 22988, U.S.N.M.

No. 26. DOLICHOPUS DEMISSUS, new species.

Male.—Length 4 mm.; of wing 3.5 mm. Face rather narrow, its pollen yellow. Front green. Antennae (fig. 26*a*) wholly black; third joint but little longer than wide, rounded at tip. Orbital cilia wholly black.

Thorax green with coppery reflections; pleurae dulled with grayish pollen. Abdomen green with coppery reflections and black incisures, somewhat dulled with white pollen, which forms large spots on the sides of the segments. Hypopygium black; its lamellae large, rounded apically, sordid whitish with broad black apical border, a little jagged and bristly at apex, fringed with delicate hairs on upper edge.

Coxae black with grayish pollen; anterior pair with small black hairs on anterior surface, the usual row of bristles at tip rather small. Femora black, fore and middle pairs becoming yellowish on apical third, the yellow extending farther toward the base on the sides of the middle pair, which have a shining black spot at base on posterior surface. Middle and hind femora each with one preapical bristle, the latter without cilia below. Fore and middle tibiae yellow, sometimes a little darkened; hind tibiae and tarsi black, the former with a narrow glabrous stripe above, just inside of the inner row of large bristles, very slightly swollen at basal third on inner side and at tip; fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia and the latter with their stems darkened.

Wings grayish (fig. 26), tinged with brown in front, which color fades out at the fourth vein; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein slightly bent just before its middle; tip of third vein bent backward, but not very close to tip of fourth vein at the wing margin; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent.

Described from 1 male taken by me at Brawn's Mills Junction, New York, June 9, 1907.

Type.—Male, Cat. No. 22989, U.S.N.M.

No. 26½. DOLICHOPUS BURNESI, new species.

Male.—Length 4 mm.; of wing 5.4 mm. Face narrow, silvery white, a little yellowish above. Front dark shining green. Antennae wholly black; third joint scarcely longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia whitish, about nine of the upper cilia on each side black. Proboscis and palpi black, the latter with a little white pollen.

Thorax and abdomen dark green or blue-green, very shining. Pleurae dulled with white pollen. The white pollen on the abdomen forms spots on the sides of the segments and extends upon the dorsum. Hypopygium black, its lamellae rather large, somewhat triangular, but a little rounded on apical margin; yellowish white, more yellow near the edges, with a broad black apical border, which shades into the yellow color extending along its inner edge; apical margin jagged, with one or two branched bristles at the lower corner, and long bristle-like hairs above them.

Coxae and femora black or metallic green, with their tips narrowly yellow. Fore coxae with white pollen and minute black hairs on the anterior surface; there are a few little white hairs on upper outer corner. Middle and hind femora each with one preapical bristle, the latter with a row of little whitish hairs on lower inner edge, which are about the same length as the black hairs along the upper edge toward the base; they are so short that they could scarcely be called cilia. Fore and middle tibiae yellow, the latter with one bristle below, middle basitarsi without a bristle above. Posterior tibiae a very little thickened apically; black with a reddish shade on basal half of upper surface. Fore tarsi (fig. 26½*a*) one and one-fourth times middle tarsi, about the length of their tibiae, black from the tip of the first joint, which is yellow. Fore tarsi with the first joint as long as the three following joints taken together, fifth shorter than fourth. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent beyond its basal third; third vein approaching fourth a very little at their tips; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded, the anal angle being nearly obsolete.

Female.—Face wide, silvery white; fore tarsi as long, middle tarsi a little longer than their tibiae, black from the tip of the first joint, first joint yellow or brownish; hind tibiae yellow with their tips black for one-third their length and with the black extending up the inner surface as a line nearly to their base. Wing as in the male except that the third vein is a little straighter and approaches the fourth a little less at their tips, and the anal angle of wing is a little fuller.

Described from 2 males and 1 female taken by E. J. Burnes on Staten Island, New York; the female was taken Sept. 1.

This bright little species resembles *setifer* Loew, but has larger and darker lamellae, which are very much like those of *albiciliatus* Loew; it also differs from the former in not having a blackish spot at tip of wing; from the latter it differs in having the hind tibiae almost wholly black, and in the hind femora not having long black cilia, but only little short pale hairs on the lower inner edge.

Type.—Male, Cat. No. 22990, U.S.N.M.

No. 27. DOLICHOPUS CONSPECTUS, new species.

Male.—Length, 3.5–4 mm.; of wing, 3.5 mm. Face rather wide, slightly narrowed below, silvery white. Front green with coppery reflections, not very bright. Antennae black; first joint yellow below, still in some individuals almost wholly black; third joint not much longer than wide, somewhat orbicular in outline, but slightly pointed at tip. Lateral and inferior orbital cilia white, about seven of the upper cilia on each side black.

Thorax green with bronze reflections, dorsum dulled with grayish pollen on its anterior portion; pleurae dulled with white pollen. Abdomen green with coppery reflections and with a little white pollen on the sides. Hypopygium black, rather short; its lamellae (fig. 27*a*) of moderate size, oval, white with a narrow black border at tip, only a little jagged on apical margin, fringed with brown hairs, which are stouter on the apical edge.

Coxae and femora black with yellow tips. Fore coxae with white pollen on their anterior surface, the inner half of which has minute black hairs and the outer side is nearly bare. Middle and hind femora each with one preapical bristle, the latter more or less yellowish at base and on inner side, ciliated with white hairs for nearly their whole length, the longest of these hairs nearly as long as width of femora. Fore and middle tibiae yellow. Hind tibiae black, more or less yellow at base; thickened and a little compressed; the glabrous stripe on upper edge not conspicuous, but extending two thirds their length. Fore tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, which is about as long as the three succeeding joints taken together. Middle tarsi one and a third times as long as their tibiae black from the tip of the first joint, still sometimes infuscated almost to their base. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia, but there is a row of pale hairs back of the cilia and if the latter are broken off these pale hairs would be mistaken for the true cilia.

Wings grayish (fig. 27); costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded, the anal angle being but little developed.

Female.—Face wide, silvery white; fore coxae with little black hairs on their entire anterior surface; hind femora more yellowish than in the male, without cilia below, but with a row of delicate, short, pale hairs on lower inner edge; hind tibiae of normal size, yellow with black tips. Otherwise about as in the male. Middle basitarsi without a bristle above.

Described from 3 males and 8 females, taken by J. M. Aldrich at Market Lake, Idaho, June 18; 1 male by W. M. Wheeler from Little Wind River, Wyoming, Sept. 2; and 1 pair by C. F. Baker from Colorado.

Type.—Male, Cat. No. 22991, U.S.N.M.

No. 28. DOLICHOPUS AGRONOMUS Melander and Brues.

Dolichopus agronomus Melander and Brues, Biol. Bull., vol. 1, 1900, pp. 140 and 148.—Aldrich, Cat. N. Amer. Diptera, 1905, p. 299.

Male.—Length 3.5–4 mm.; of wing 3–3.75 mm. Face rather wide and perhaps rather long (Melander and Brues in their description say it is very long, I should not call it unusually so, but it appears longer on account of the lower portion below the usual transverse ridge being very short). Front silvery white, still the green ground color shows through in certain lights. Antennae wholly black (fig. 28*a*); third joint large, nearly twice as long as wide, pointed at tip; arista only a little longer than the antenna, inserted a short distance before the point. Cilia of the lateral and inferior orbits white, a few of the upper cilia black.

Thorax green with slight bronze reflections; dorsum covered with thin white pollen, which leaves a median shining vitta, this vitta in some specimens is slightly coppery with a fine green line on each side; pleurae more blackish with grayish pollen. Abdomen green with coppery reflections along the center of the dorsum and narrowly black at the incisures, covered with white pollen which is more conspicuous on the lower part of the sides. Hypopygium black; its lamellae rather small, oval, jagged at apex where there are the usual bristles.

Coxae black with yellow tips and white pollen, that on the anterior surface of fore pair silvery; the hairs on anterior coxae yellowish. Femora black, their tips and the trochanters yellow; middle and hind femora each with one preapical bristle, the latter with very delicate whitish cilia on lower inner edge, the longest of these hairs about half as long as width of femora (sometimes the cilia are shorter and so delicate as to be easily overlooked). Fore and middle tibiae yellow; posterior pair black, slightly thickened, the usual glabrous stripe on upper surface narrow but extending their whole length. Fore tarsi yellow, infuscated toward their tips (in the type specimen black from the tip of the first joint), a little longer than their tibiae, which are also short. Middle tarsi about one and a half times as long as their tibiae, yellow at base, becoming blackish at tip. Hind tarsi black. Calypters, their cilia and the halteres yellow (I do not see the strong black hair among these cilia mentioned by Melander and Brues in their description).

Wings a little grayish (fig. 28); costa not or scarcely enlarged at tip of first vein; last section of fourth vein bent before its middle, nearly parallel with third beyond this bend, still the third vein bent back a little at tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle nearly obsolete, the wing being much narrowed at base; root of wing yellow, veins blackish.

Female.—Face nearly as wide as the front, silvery white; front with white pollen which nearly conceals the ground color; antennae with the third joint about as long as wide. Thorax and abdomen about as in the male; fore tarsi shorter than their tibiae, black from the tip of the first joint; middle tarsi scarcely longer than their tibiae, black from the tip of first joint, first joint without a bristle above; middle tibiae with one bristle below; hind tibiae and tarsi as in the male, except that the tibiae are more yellow at base. Cilia of calypters black. Wings as in the male, except that the anal angle is a little more prominent.

Redescribed from the type specimen in the American Museum, which was taken at New Bedford, Massachusetts, June 8; 1 male and 2 females taken in the same location as the type by Hough, May 13 and 31, 1896 (coll. of J. M. Aldrich); and 2 males taken by C. W. Johnson at Woods Hole, Massachusetts, June 19.

No. 29. DOLICHOPUS GRATUS Loew.

Dolichopus gratus Loew, Neue Beitr, vol. 8, 1861, p. 16; Mon. N. Amer. Diptera, pt. 2, 1864, p. 29.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 7.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 4–4.5 mm.; of wing 4–5 mm. Face narrow, sordid white, darker on upper part, sometimes tinged with yellow. Front green, usually with blue reflections. Antenna (fig. 29*a*) wholly black; third joint about as long as wide, a little pointed at tip. Palpi black. Orbital cilia wholly black.

Thorax dark green, shining, with blue and sometimes bronze reflections; pleurae dulled with a little whitish pollen. Abdomen green with beautiful blue reflections and black incisures; the white pollen on its sides conspicuous. Hypopygium black; its lamellae rather large, whitish with black border, rather truncate at apex, deeply jagged and bristly on apical margin, fringed on the sides with black hairs.

Coxae black, their tips a little yellowish; fore coxae with white pollen and rather long black hair on their anterior surface and strong black bristles at tip. Middle and hind femora each with one preapical bristle, the latter ciliated with strong black hairs on lower inner edge, the longest of which are fully as long as the width of the femora. Middle femora with a fringe of delicate pale hairs on their lower edge, the longest of which are not half as long as the width of femora, these hairs appear blackish in certain lights and end near the tip with several little black bristles; the fore femora also have a fringe of delicate little pale hairs on lower edge, but they are not as long as those on the middle pair, these also end in several little black bristles. Fore and middle tibiae yellow, with strong bristles. Hind tibiae black, except a yellow space on their upper surface extending from the knee for one-third, sometimes one-half, their length and shading into the black on the sides of the femora, sometimes the femora are yellow at base even on the lower side; there is also a short, yellow, depressed streak at the apical end of the glabrous stripe on upper edge; inside of the inner row of large bristles is another glabrous stripe; they are gradually but considerably thickened from base to tip. Fore tarsi a little longer than their tibiae; first joint nearly as long as the remaining four joints taken together; fourth joint about equal to the fifth in length, wholly or almost wholly yellow. Middle tarsi a little longer than their tibiae, yellow, becoming slightly infuscated toward their tips. Hind tarsi one and a third times as long as their tibiae, deep black. Calypters and halteres yellow, the former with black cilia.

Wings grayish (fig. 29); veins yellowish brown; costa black, thickened at tip of first vein, gradually tapering to its tip; last section of fourth vein moderately bent before its middle; tips of third and fourth veins rather close together; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded, the wing being rather broad in the middle and the anal angle not prominent.

Female.—Face rather wide, silvery white; hind femora not ciliated but with a fringe of little hairs below; fore and middle femora fringed about as in the male, but the hairs scarcely as long; fore and middle tarsi more infuscated; the yellow of hind tibiae more extensive; costa not enlarged at tip of first vein.

Redescribed from many males and females from New York, Illinois, Michigan, and Canada. Melander and Brues report it from Wisconsin; Aldrich from the White Mountains, New Hampshire. Johnson in Insects of New Jersey from Palisades and Dunnfield, New Jersey.

Type locality.—New York.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 30. DOLICHOPUS CALCARATUS Aldrich.

Dolichopus calcaratus Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 8.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length, 5–5.5 mm.; of wing, 4–5 mm. Face rather narrow, yellowish brown. Front shining green. Antennae wholly black; third joint somewhat conical in outline, not much longer than wide. Orbital cilia wholly black.

Thorax green, shining, sometimes with blue, in others with bronze vittae; pleurae more black with gray pollen. Abdomen dark green with black incisures. Hypopygium black; its lamellae (fig. 30*a*) large, oval, but rather truncate at apex, whitish, but sometimes the broad black border shades into the disk so they are mostly brownish, deeply jagged and bristly on apical margin, fringed with long hairs on the edges.

Coxae black with yellow tips; anterior pair with coarse black hair on the front surface and strong bristles at tip. Femora black with yellow tips; middle and hind pairs about as in *gratus* Loew. Fore and middle tibiae yellow. Hind tibiae black, only a little yellowish at base, the yellow not extending over one-fourth their length on upper edge. All tarsi as in *gratus*. Calypters and halteres yellow, the former with black cilia.

Wings like those of *gratus* (fig. 30), except that the veins are blackish.

Female.—Like the female of *gratus*, except that the hind tibiae are only a little yellowish at base, the yellow not extending over one-third their length on upper edge.

Redescribed from the type specimen in the collection of J. M. Aldrich; it was taken at Dover, New Jersey, June 18; 1 male taken at Franconia, New Hampshire, by Mrs. Slosson; 1 pair taken at Colden, New York, July 30 and Aug. 23; 2 males from Boston, New York, July 10; 1 female taken at East Aurora, New York, July 29; 1 male taken at Bond Lake, Ontario, July 16; and 3 males and 5 females taken at Kearney, Ontario, July 3.

I have carefully compared the type and the other specimens with a long series of *gratus* and can find no noticeable difference, except the color of the hind tibiae, but there seems to be no grading in the coloring of the series of *gratus* and the series of *calcaratus*.

No. 31. DOLICHOPUS MELANDERI, new species.

Male.—Length, 4 mm.; of wing, 3.5 mm. Face rather wide, silvery white. Front shining green, sometimes bronze brown. Antennae black; first joint yellow below, usually conspicuously so; third joint about as long as wide, somewhat orbicular in outline, but pointed at tip. Lateral and inferior orbital cilia white, about seven of the upper cilia on each side black.

Thorax green with coppery reflections, sometimes mostly coppery, a little dulled with gray pollen, especially along the front edge; pleurae with white pollen. Abdomen green with coppery reflections on the hind margins of the segments, and a little white pollen on its sides. Hypopygium black; its lamellae moderately large (fig. 31*a*) somewhat quadrilateral in outline, but with the tip rounded, white with a narrow black border on upper and apical margins which are a little jagged and bristly.

Coxae and femora black, extreme tips of coxae, trochanters and extreme base and tips of femora yellow, the yellow sometimes more extensive on the hind femora. Anterior coxae with white pollen and little black hairs on their front surface. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with stiff white hairs on apical two-thirds, these hairs nearly as long as the width of the femora, they do not quite reach the tip. Fore and middle tibiae yellow; hind tibiae black, moderately thickened, yellow on their upper edge for one-third their length. Fore and middle tarsi a little longer than their tibiae, black from the tip of first joint, the joints of regularly decreasing length; fore basitarsi about as long as the three following joints taken together; middle basitarsi about as long as the two following joints and without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with pale cilia, still there are usually a few black hairs among the cilia.

Wings grayish (fig. 31); costa scarcely enlarged at tip of first vein; last section of fourth vein bent beyond its basal third; third and fourth veins nearly parallel beyond the bend; hind margin of wing scarcely indented at tip of fifth vein, nearly evenly rounded, anal angle of wing not very prominent.

Described from 7 males taken by A. L. Melander in Washington, 1 at Prosser, May 4, 1911, and 6 at Kennewick, June 7, 1916.

Type taken at Kennewick, Washington, and in the A. L. Melander collection. One paratype in the United States National Museum.

Paratype.—Male, No. 22992, U.S.N.M.

No. 32. DOLICHOPUS JOHNSONI Aldrich.

Dolichopus johnsoni Aldrich, Kansas Univer. Quart., vol. 2, 1893, p. 7.

Male.—Length 3.2–4 mm.; of wing 3–3.2 mm. Face narrow, yellowish on upper portion, more white below, sometimes entirely white. Front green, not very dark, shining. Antennae (fig. 32*a*) wholly black; third joint a little longer than wide, its form nearly a perfect oval. Palpi yellowish brown. Orbital cilia wholly black.

Thorax green, dorsum with more or less bronze reflections and a little white pollen on the front edge; pleurae more blackish with white pollen. Abdomen green with black incisures and slight bronze reflections; the white pollen on its sides abundant and visible almost to the center of the dorsum. Hypopygium black; its lamellae rather small, somewhat triangular in outline, but rounded on upper corner, white with a narrow black border apically, where it is jagged and bristly.

Coxae black with narrow yellow tips. Fore coxae with white pollen and little black hairs on their anterior surface. Femora black with yellow tips. Middle and hind femora each with one preapical bristle, the latter with brown cilia on lower inner edge of apical half, the longest of these hairs about three-fourths as long as width of femora. Fore and middle tibiae yellow. Hind tibiae black, a little thickened, the glabrous stripe on upper surface can scarcely be traced. Fore tarsi about one and a fourth times as long as their tibiae, yellow, the tips of the joints being brown, sometimes they are infuscated from the tip of the first joint, basitarsi about the length of the three following joints taken together, fourth and fifth joints of about equal length. Middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi one and a half times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings strongly and rather uniformly tinged with blackish (fig. 32), but often more gray toward their base and along the hind margin; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein slightly bent before its middle; hind margin of wing slightly indented at tip of fifth vein; anal angle prominent, the wing being of nearly equal width.

Female.—Face narrow for a female, yellowish gray; third antennal joint very small; hind femora not ciliated; wings strongly tinged with yellowish brown in front as far back as the fourth vein and narrowly brownish along the fifth and cross veins; back of fourth vein the wing is brownish gray; wings shaped about as in the male, still a little more rounded on hind margin.

Redescribed from the type specimen in the collection of J. M. Aldrich taken at Jamesburg, New Jersey, July 4, 1891; also 1 female taken at the same place on July 4, 1894; 2 males taken by N. Banks at Beltsville, Maryland, June 9, in a swamp; and 1 male taken by W. L. McAtee, at Beltsville, Maryland, July 4, 1916.

No. 33. DOLICHOPUS APPENDICULATUS, new species.

Male.—Length 4 mm.; of wing 3.8 mm. Face long, reaching below the lower corner of the eye, rounded below, without the transverse ridge which usually separates the upper from the lower portion of the face in this genus, silvery white. Front green, usually with bronze reflections and somewhat dulled with whitish pollen. First two joints of antennae mostly yellow, black or brown on upper edge; third joint about one and a half times as long as wide, oval, but obtusely pointed at tip; arista inserted a little before the tip of third joint, longer than the antenna. Lateral and inferior orbital cilia silvery white, much flattened, the black cilia of upper orbit short and stout, reaching down about one-third of the eye height.

Thorax shining green, sometimes with bronze reflections, which form in some specimens as many as five indistinct vittae on the dorsum; in one female the dorsum is more coppery than green; pleurae scarcely dulled with pollen. Abdomen shining green, usually with coppery reflections on the dorsum before the incisures, the last two segments mostly coppery on the upper surface. Hypopygium black; its lamellae rather large, somewhat triangular in outline, whitish but tinged with brown, apical and upper edges rather broadly bordered with black, jagged and bristly at apex, fringed with delicate black hairs on upper edge.

Coxae black, the anterior pair tinged with green and with thick silvery pollen and very minute white hairs on the front surface; the usual row of bristles at tip are strong. Femora black with green reflections, their tips yellowish, the middle pair has the yellow more extensive and paler. Middle and hind femora each with one preapical bristle, the latter not ciliated but with a row of minute brown hairs on lower outer edge, upper edge fringed with rather long black hairs; these are longest near the base. Fore tibiae blackish, sometimes a little yellowish on apical half. Middle tibae brownish yellow, sometimes quite dark, darker at base on posterior surface, with three large bristles on lower side and three on posterior side; on the upper surface near the middle is a bristle-like appendage (fig. 33*a*), which is a little shorter than the middle basitarsi and is a little enlarged at tip. Hind tibiae a little thickened, shining black, with three or four large bristles below. Fore tarsi a little longer than their tibiae, black, their joints of decreasing length. Middle tarsi (fig. 33*b*) slender, about once and a half as long as the tibiae; fifth joint about as long as fourth, a little compressed, widened toward the tip; first four joints pale yellow, their tips enlarged and black, each joint narrowed at base. Hind tarsi wholly black, their basitarsi with two large bristles above. Calypters, their cilia, and the halteres yellow.

Wings grayish (fig. 33), usually tinged with brown along the front for a short distance, from the tip of the second vein toward the base; costa enlarged so as to fill all the space between the costa and the first vein, except a small open spot near the root of the wing, seen from the front edge of the wing this enlargement appears flattened with its tip obliquely truncate, ending in a little point on lower angle, this enlargement velvety black; last section of fourth vein considerably bent at its middle; tip of third vein bent backward; hind margin of wing scarcely indented at tip of fifth vein; anal angle of wing very prominent, the wing being of nearly parallel width, but a little wider just before the anal angle than in the middle.

Female.—Differs from the male in having the face wider and more grayish white than silvery; third antennal joint shorter; fore coxae with black hairs; fore and middle tibiae black; middle tarsi black with the extreme bases of the joints yellowish, tips of first four joints a little enlarged, fifth joint a very little compressed, but not as much as in the male; wings as in the male, except that the costa is not at all enlarged at tip of first vein, the cell between the costa and the first vein is more or less tinged with brown, and the anal angle of wing is not quite as prominent.

Described from 7 males and 4 females. Prof. J. M. Aldrich took 2 males and 2 females at Wells, Nevada, July 12, 1911; I took 4 males and 2 females at the same place June 6, 1915, and 1 male at Saltair, on Great Salt Lake, Utah, June 8, 1915.

Type.—Male, Cat. No. 22993, U.S.N.M., from Wells, Nevada.

No. 34. DOLICHOPUS FUMOSUS, new species.

Male.—Length 3.5 mm.; of wing 3 mm. Face rather wide, yellowish. Front green. Antennae (fig. 34*a*) black, first joint slightly yellowish below; first and second joint short; third joint about three times as long as wide with an acute point at tip, its pubescence conspicuous; arista but little longer than the third joint and inserted just above its tip, inferior orbital cilia whitish, about six of the upper cilia on each side black.

Thorax greenish brown, dulled with brownish gray pollen, which leaves when viewed in certain directions three shining vittae; pleurae with grayish pollen. Abdomen bronze brown with green reflections and with large spots of white pollen on the sides of the segments. Hypopygium black; its lamellae small, oval, narrowed into the stem, whitish with a black border, jagged and bristly at apex and with delicate hairs on upper edge.

Coxae black, their extreme tips and the trochanters yellow. Fore and middle femora black with broad yellow tips. Middle and hind femora with one preapical bristle, the latter black and apparently without cilia below. Fore and middle tibiae yellow; hind tibiae brownish yellow, becoming black at tip, but little thicker than the others, the glabrous stripe on upper surface extending nearly their entire length; fore and middle tarsi about equal to their tibiae in length, yellow, infuscated from the tip of first joint, still each joint paler at base. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 34) grayish; costa enlarged at tip of first vein, gradually tapering to its tip; last section of fourth vein a little bent at its basal third; third and fourth veins nearly parallel beyond this bend; hind margin of wing scarcely indented at tip of fifth vein, evenly rounded; anal angle broadly rounded.

Described from 1 male taken at Farwell Creek, South Saskatchewan, Canada, in July, 1907, by Dr. E. M. Walker.

Type.—Male, Cat. No. 22994, U.S.N.M.

This species has remarkable antennae; the acute point, conspicuous pubescence, and nearly apical arista, are rarely found in this genus.

No. 35. DOLICHOPUS CONVERGENS Aldrich.

Dolichopus convergens Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 9.

Male.—Length 4 mm.; of wing 3.8–4 mm. Face rather narrow, silvery white. Front green or blue green. Antennae (fig. 35*a*) wholly black; third joint oval, not much longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish white, the black cilia descending about one fourth the eye height.

Thorax dark green, dorsum dulled with nearly invisible brown pollen and with blue reflections; pleurae dulled with a little grayish pollen. Abdomen dark green with narrow black incisures, slight blue reflections and a little white pollen on the lower part of the sides. Hypopygium black; its lamellae are not very large, somewhat triangular in outline, whitish with a moderately wide border, jagged and bristly at apex and with a few delicate hairs on the upper and lower edges.

Coxae black with yellow tips; anterior pair with silvery pollen and little black hairs on the front surface, the usual row of bristles at tip. Trochanters yellow. Femora black with yellow tips. Middle and hind femora each with one preapical bristle, the latter without cilia below. Tibiae yellow, posterior pair with their tips narrowly black, scarcely thickened. Fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint, still the base of the second joint is yellowish. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 35) a little grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent near its middle; third and fourth veins convergent, their tips about one-third as far apart as the tips of the second and third veins; fourth vein ending nearly the length of the cross-vein before the apex of the wing; hind margin of wing not indented at tip of fifth vein; anal angle obsolete, the wing being narrowed toward the base.

Female.—Face nearly as wide as the front, white; third antennal joint a little smaller; otherwise about as in the male.

Redescribed from one of the type specimens and several specimens from Mount Constitution, Washington, July 7 and 17; and Keyport, Washington, August 7 (Aldrich).

Type locality.—Mount Hood, Oregon.

No. 36. DOLICHOPUS NUBIFER, new species.

Male.—Length 4–4.5 mm.; of wing 4 mm. Face rather narrow, its sides nearly parallel, silvery white. Front shining green. Antennae wholly black; third joint about as long as wide, somewhat rounded at tip; arista longer than antenna. Orbital cilia wholly black.

Thorax dark green with coppery reflections, shining; pleurae dulled with gray pollen. Abdomen dark bronze green with black incisures and white pollen on the sides of the segments. Hypopygium black; its lamellae rather large, somewhat round in outline but narrowing suddenly into the stem, white with a broad black border on apical margin, which is a little jagged and fringed with long delicate hairs.

Coxae and femora black; trochanters and tips of femora yellow, the yellow more extensive on middle pair. Middle and hind femora each with two preapical bristles, placed one before the other, the latter without cilia below. Tibiae yellow; posterior pair black at tip for one-fourth their length; a little thickened, especially at tip, with a rather broad glabrous stripe on upper surface for nearly their whole length; this stripe seems to have an almost golden reflection, in certain lights, on the yellow portion (probably from a golden yellow pollen); the middle tibiae also show a trace of this color. Fore tarsi a very little longer, middle tarsi about the same length as their tibiae, both black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 36) tinged with dark gray and with an ill-defined cloud along the costa, from a little beyond the tip of first vein to the tip of third and extending back to or beyond the third vein, cross-vein also a little clouded; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent before its middle; tips of third and fourth veins rather widely separated; hind margin only a little indented at tip of fifth vein; anal angle of wing rounded, not prominent.

Female.—Agrees with the male, except that the face is wide; third antennal joint smaller, and the clouds on the wings very indistinct. The middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 3 males and 1 female which I took at Wells, Nevada, June 6, 1915.

Type.—Male, Cat. No. 22995, U.S.N.M.

No. 37. DOLICHOPUS BARBICAUDA, new species.

Male.—Length 4.3 mm.; of wing 3 mm. Face rather narrow, white, scarcely silvery, and with a slight yellowish tint. Front green with bronze reflections, more blue in one specimen. Antennae (fig. 37*a*) wholly black; third joint only a little longer than wide, ovate, but with a rather sharp point at tip. Lower orbital cilia yellowish white, the black cilia reaching down the middle of the eye.

Thorax green with bronze reflections, which sometimes form one to three vittae on anterior part of the dorsum; in one specimen the reflections are blue and the scutellum is almost violet; pleurae more blackish, dulled with gray pollen. Abdomen green with black incisures and coppery reflections on the posterior margins of the segments. Hypopygium black; its lamellae (fig. 37) moderately large, somewhat triangular in outline, yellowish with long, black, bushy, very dense hair on apical portion and short black hairs on the whole outer surface, not at all jagged on apical margin.

Coxae and femora black, their tips and the trochanters yellowish. Fore coxae with black hairs on anterior surface, the usual bristles at tip. Middle and hind femora each with one preapical bristle, the latter not ciliate but fringed on lower outer edge with delicate little black hairs. Tibiae yellow; posterior pair rather stout, black at tip for one-fifth their length, the glabrous stripe on upper surface distinct and reaching the entire length. Fore tarsi about as long as their tibiae, brownish yellow, first joint a little shorter than the remaining four taken together, second joint very little longer than third, last three joints of nearly equal length, still the fourth a little the shortest. Middle tarsi slightly longer than their tibiae, infuscated from the tip of the first joint, but scarcely black. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa not at all enlarged at tip of first vein; last section of fourth vein bent at its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle rounded, not prominent.

Female.—Agrees with the description of the male given above, except that the face is as wide as the front and is more grayish white; the hind tibiae have more black at their tips but it is less sharply defined and the wings are a little tinged with yellowish brown in front of the third vein. The delicate hairs on lower outer edge of hind femora are smaller than in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 9 males and 4 females. Two males are in the collection of J. M. Aldrich; 1 male was taken at Montreal Island, Quebec, and 1 at Toronto, Ontario, May 23, 1896. One female was taken at Ottawa, Canada, July 2, 1912, by G. Beaulieu; 1 female at Summerside, Prince Edward Island, July 21, 1914, by Dr. E. M. Walker. I took the other specimens at Toronto, Ontario, July 4, 1911, and July 21, 1918.

Type.—Male, Cat. No. 22996, U.S.N.M., from Toronto, July 21, 1918.

No. 38. DOLICHOPUS BISETOSUS, new species.

Male.—Length 4–5 mm.; of wing 4–4.25 mm. Face rather wide, white, a little tinged with gray or yellowish gray. Front shining green with more or less distinct violet reflections. Proboscis, palpi, and their hairs black. Orbital cilia wholly black. Antennae (fig

38*a*) wholly black; third joint one and a half times as long as wide, somewhat pointed at tip.

Thorax green, shining, sometimes with blue and coppery reflections, which form narrow stripes on the dorsum; pleurae dulled with gray pollen. Abdomen green with blue and coppery reflections and black incisures; second segment with a patch of rather long yellowish white hair on each side near the lower edge, usually this hair is quite conspicuous. Hypopygium black; its lamellae (fig. 38) rather small, somewhat circular in outline but nearly straight above, blackish, not jagged, fringed with delicate black hairs.

Coxae black with yellow tips; anterior pair with white pollen and black hairs on the front surface, fore and middle femora black with yellow tips; middle pair black with apical third or more yellow, the black shading into the yellow. Hind femora nearly bare below with rather long hair on upper edge and two preapical bristles, one nearly below the other; middle femora with two, often with three preapical bristles. Tibiae yellow; posterior tibiae black at tip, the black shading into the yellow and extending to or beyond the middle on inner side, a little stouter than the others, slightly swollen at basal third and at tip; the glabrous stripe on upper surface wide, extending upon the inner side of the inner row of large bristles for about one-third their length. Fore tarsi nearly equal to their tibiae in length; first joint scarcely as long as the remaining four taken together, brown from the tip of the first joint. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi deep black, one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings grayish, a little darker along the front; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent near its basal third; hind margin of wing scarcely indented at tip of fifth vein, not much rounded, the wing being of nearly equal width; anal angle rounded, not very prominent.

Female.—A number of females were taken with these which differ from the males in having all the femora black with the tips yellow; middle tibiae yellowish at base becoming black at tip, sometimes largely black; the tarsi all black, except the fore basitarsi, which are mostly yellow. The wings are more broadly rounded on the hind margin than in the male. The middle and hind femora each with two preapical bristles which are placed one nearly below the other; middle tibiae with two bristles below, their basitarsi with a large bristle above.

Described from 8 males and 12 females which were taken on Craig's Mountain, Idaho, and 1 male taken at Lawyer's Canyon, Idaho, June 16, 1909 (all by J. M. Aldrich).

Type.—Male, Cat. No. 22997, U.S.N.M., from Craig's Mountain. The females described above seem to differ from the females which I have placed with *D. beatus* by their having a bristle on the upper surface of the middle basitarsus, which I can not find in the females placed as those of *beatus*.

No. 39. DOLICHOPUS INTENTUS Melander and Brues.

Dolichopus intentus Melander and Brues, Biol. Bull., vol. 1, 1900, p. 137, figs.

Male.—Length 4 mm.; of wing 3.5 mm. Face moderately narrow, white. Front violet, narrowly green around the edges, shining. Antennae wholly black; third joint three times as long as wide, tapering to a point, the arista inserted just above this point, not much over one-half as long as the third joint. Orbital cilia wholly black.

Thorax dark green, not very shining; pleurae black with gray pollen. Abdomen dark greenish, almost bronze brown, shining, with but little white pollen on its sides. Hypopygium black; its lamellae (fig. 39) small, blackish, a little paler in the middle, nearly triangular in outline, not jagged or bristly, fringed on apical margin with delicate little brown hairs.

Coxae blackish; the anterior pair appear to be nearly bare; femora black with yellow tips. Middle femora with one preapical bristle (there may have been two and one have been broken off); hind femora with two preapical bristles, placed one above the other, without cilia below. Tibiae yellow; posterior pair black at tip, the glabrous stripe between the two rows of large bristles on upper surface narrow but distinct. Fore tarsi black from the tip of the first joint, not longer than the short fore tibiae; last four joints short, the fourth being slightly shorter than the fifth. Middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings grayish; veins black; costa with a small knotlike enlargement at tip of first vein; last segment of fourth vein a little bent near its basal third; third vein bent backward a little at tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent.

Redescribed from the single type specimen in the American Museum collection; it was taken at Chicago, Illinois, May 8, 1896.

No. 40. DOLICHOPUS ANGUSTICORNIS, new species.

Male.—Length 4 mm.; of wing the same. Face rather wide, silvery white. Front green, rather thickly covered with gray pollen. Antennae (fig. 40) wholly black, third joint large, nearly four times as long as wide, pointed at tip; arista short, about two-fifths as long as third antennal joint and inserted just above its tip. Inferior orbital cilia whitish, the upper cilia black.

Thorax green, dorsum dulled with whitish pollen, which leaves obscure vittae that are shining, the median one is somewhat coppery; pleurae more black, dulled with gray pollen. Abdomen green with black incisures, covered with white pollen, which is thickest on the sides and in certain lights leaves a central black vitta. Hypopygium black; its lamellae (fig. 40*a*) moderately large, somewhat orbicular in outline, whitish with a narrow black border on apical and upper margins, jagged and bristly on lower corner, fringed with long delicate hairs on apical and upper edges.

Coxae and femora black, tips of fore and middle coxae, trochanters and tips of femora yellow. Middle and hind femora each with one preapical bristle, the latter not ciliated, still they have a row of long pale hairs on lower inner edge, which are very delicate and not easily seen, they are about one-fourth to one-third as long as the width of the femora. Tibiae yellow; posterior pair black at tip for one-sixth their length and with a blackish spot on inner surface at basal third, only a little thickened, the glabrous stripe on upper surface is broad and extends nearly their entire length. Fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters, their cilia, and the halteres yellow.

Wings a little grayish; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein a little bent just before its middle, from which point it is nearly parallel with third vein; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Female.—Face wider than in the male; third antennal joint large, long for a female, somewhat triangular in outline, acutely pointed at tip, arista nearly apical; thorax dulled with whitish pollen as in the male; wings without an enlargement at tip of first vein, otherwise as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 1 male and 1 female which were swept from winter wheat at Evansville, Indiana, May 7, 1914, by J. M. Aldrich.

Type.—Male, Cat. No. 22998, U.S.N M.

This species somewhat resembles *intentus* Melander and Brues, but it differs in having only one preapical bristle on the middle and hind femora, in having the front greenish, dulled with gray pollen, not metallic violet as in *intentus;* it also differs in the form of the lamellae.

No. 41. DOLICHOPUS AEQUALIS, new species.

Male.—Length 4 mm.; of wing the same. Face narrow, silvery white. Front shining green with a little brown pollen visible on lower part when viewed in certain directions. Antennae (fig. 41*b*) wholly black; third joint a little longer than wide, somewhat conical in outline. Orbital cilia wholly black, except that there are from two to five yellowish bristles on each side near the proboscis.

Thorax shining green, sometimes with an indistinct median coppery vitta; pleurae slightly dulled with grayish pollen. Abdomen dark green, its incisures black, the white pollen on the sides confined to the extreme lower edge of the dorsum. Hypopygium black with green reflections; its lamellae (fig. 41*a*) large, whitish with a narrow black border, but the apical half appearing blackish on inner side on account of the little black hairs on its surface, outer portion somewhat oval and at nearly right angles to the stem, jagged on outer edge and fringed with rather long hairs.

Coxae and femora black, the latter with yellow tips. Middle and hind femora each with one preapical bristle, the latter with a fringe of short brown hairs below; these hairs are delicate and scarcely as long as the row of black hairs on upper edge of basal half. Tibiae yellow: posterior pair with black tips. Fore tarsi (fig. 41*b*) about one and a fourth times as long as their tibiae, brownish, becoming black at tip, still a little yellowish at base; first joint about as long as the three succeeding joints taken together, second and third joints of nearly equal length, fourth and fifth joints also of nearly equal length but shorter than the preceding ones; last three joints slightly compressed and gradually widened; pulvilli white, conspicuous. Middle tarsi about one and a fourth times as long as their tibiae, black with the base of the first joint yellowish. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 41) grayish; costa not enlarged at tip of first vein; last section of fourth vein a little bent at about its basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle rounded, not very prominent.

Female.—Face broad, silvery white; hind femora with a row of rather long hairs on lower inner edge, but these are not as long as in the male. It agrees with the male in having one large bristle below on middle tibiae, the basitarsi being without a bristle above, in having the yellow bristles near the proboscis and in the wing form. The fore tarsi are scarcely longer than their tibiae and not noticeably compressed.

Described from specimens taken by me in Erie County, New York; 4 males and 1 female were taken at Colden, July 4, and August

19; 2 males were taken at Boston, New York, July 10; and 2 males and 1 female were taken at East Aurora, August 3.

This seems to be the same species as stood in the Loew collection at Cambridge, under the MS. name of *stenoprosopus*. I could not find this specimen when looking over the collection in 1919, but Professor Aldrich saw it when looking over the Loew types in 1901.

Type.—Male, Cat. No. 22999, U.S.N.M.

No. 42. DOLICHOPUS LITORALIS, new species.

Male.—Length 4 mm.; of wing 3.5 mm. Face moderately wide, a little narrow below, silvery white. Front dark green. Antennae wholly black; third joint but little longer than wide, oval in outline. Lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Thorax dark green with coppery reflections, especially at the suture; pleurae dulled with gray pollen. Abdomen green with slight coppery reflections. Hypopygium black; its lamellae (fig. 42) moderately large, somewhat quadrilateral in outline, whitish with a narrow black border on apical and upper margins, jagged and bristly on apical margin, fringed on upper edge with brown hairs.

Coxae and femora black, extreme tips of coxae, trochanters and extreme base and tips of femora yellowish. Fore coxae with minute black hairs on the anterior surface. Fore and middle femora each with one preapical bristle, the latter ciliated below with long white hairs on lower apical fourth, these hairs nearly as long as the width of the femora; the fore and middle femora also have a row of short but conspicuous white hairs on lower posterior edge. Tibiae yellow; posterior pair a little stouter than the others, their tips black for fully one-fourth their length; middle and hind tibiae each with one bristle below near apical fourth. Fore tarsi about one and a fourth times as long as their tibiae, first joint scarcely as long as the three succeeding joints taken together, third, fourth and fifth joints of nearly equal length, second only a little longer than third, each joint, beginning with the second, narrowed a little at base, so as to give the tarsi a serrate appearance. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint, their basitarsi without a bristle above. Hind tarsi wholly black. Calypters, their cilia and the halteres yellow.

Wings (fig. 42*a*) grayish, a very little tinged with brown in front of third vein; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent before its middle; third vein bent backward a little so as to approach the fourth at tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent, still the wing of somewhat equal width, a little narrowed at base.

Described from 2 males taken by A. L. Melander in Washington; 1 at Seattle, August 2, 1908, the other at Tacoma, August 27, 1911.

Type.—In the collection of A. L. Melander, and taken at Tacoma, Washington.

No. 43. DOLICHOPUS PACKARDI, new species.

Male.—Length 4 mm.; of wing the same. Face quite wide, a little narrowed below, silvery white. Front blue green, dulled with gray pollen. Antennae wholly black; third joint only a little longer than wide, conical in outline with the apex a little rounded. Orbital cilia black, but back of these, near the proboscis are several small and one or two large yellowish bristles. Proboscis and palpi black.

Thorax bronze brown with green reflections, dorsum dulled with grayish pollen, which forms indistinct vittae, this pollen is more white along the anterior and lateral margins of the dorsum; pleurae dulled with gray pollen. Abdomen green with coppery reflections; hind margins of the segments black; the white pollen on the sides abundant and extending over the dorsum. Hypopygium black; its lamellae moderately large, somewhat elliptical in outline with a slight sinus below, white with a broad black border on apical margin, which extends narrowly along the upper and lower edges, jagged and bristly at apex, fringed above with blackish hairs.

Coxae and femora black, with their extreme tips a little yellowish. Fore coxae thickly covered with white pollen and little black hairs on their anterior surface. Middle and hind femora each with one preapical bristle, the latter ciliate on lower inner edge with a few long pale hairs which appear more black at their base; the longest of these hairs are near the middle of the femora and are as long as the width of the femora; these cilia are continued nearly to the base of the femora by short brownish hairs. Tibiae yellow; middle pair a little infuscated at tip and with five bristles on lower surface; posterior pair a little thickened, black at tip, the black shading into the yellow; the glabrous stripe on upper side can be seen as a shining line between the rows of large bristles; there is also a glabrous space on inner surface, wide at base of tibiae and tapering to a shining line just inside of the inner row of bristles and extending to the tip. Fore tarsi nearly one and a half times as long as their tibiae, black almost to their base, which is a little yellowish brown, the joints of regularly decreasing length. Middle tarsi blackish, one and a half times as long as their tibiae, their basitarsi with a bristle above and several small ones below. Hind tarsi black, nearly twice as long as their tibiae, their basitarsus two-thirds as long as the tibia. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 43) dark grayish, slightly tinged with brown in front and along the veins; costa a very little thickened at tip of first vein, tapering to its tip; last section of fourth vein a little bent just beyond its basal third; third and fourth veins approach each other a little from the bend, still their tips rather far apart; hind margin of wing scarcely indented at tip of fifth vein; evenly rounded, the anal angle not being prominent.

Described from 1 male taken by Prof. A. S. Packard at Strawberry Harbor, Labrador.

Type.—In the Museum of Comparative Zoology in Cambridge, Massachusetts.

No. 44. DOLICHOPUS XANTHOCNEMUS Loew.

Dolichopus xanthocnemus Loew, Mon. N. Amer. Dipt., pt. 2, 1864, p. 31.—Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 424.

Male.—Length 4 mm.; of wing 3.75 mm. Face of moderate width, silvery white. Front bluish green or bronze green. Antennae (fig. 44*a*) wholly black; third joint nearly round in outline, a little pointed at tip; lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Thorax green, not very shining, with slight bronze reflections, which sometimes take the form of vittae; pleurae a little dulled with gray pollen. Abdomen green with black incisures, covered with white pollen which is thickest on its sides and leaves a blackish stripe on the center of the dorsum in certain lights. Hypopygium black; its lamellae rather small, somewhat oval in outline, whitish with a black border at apex; jagged and bristly on apical margin.

Coxae black with their extreme tips and the trochanters yellowish. Femora black with yellow tips; the yellow on middle pair often shades into the black, making them more than half yellowish; hind pair sometimes yellowish below. Middle and hind femora each with one preapical bristle, the latter ciliate below with very delicate pale hairs, which are rather scattering and about as long as the width of the femora; the fore and middle femora have minute pale hairs below, which may be easily overlooked. Tibiae yellow; posterior pair black at tip for nearly one-third their length, the black part a little more thickened than the rest. Fore and middle tarsi a little longer than their tibiae, blackened from the tip of the first joint; fore tarsi with the third and fifth joints of equal length, the fourth being a little shorter. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 44) grayish; costa with a very small knot-like enlargement at tip of first vein; last section of fourth vein moderately bent before its middle; hind margin of wing not indented at tip of fifth vein; anal angle quite prominent, making the wing of somewhat equal width from tip of second vein to the anal angle.

Female.—Like the male, except that the face is a little wider and more white than silvery; the hind femora are without cilia, and the costa is not enlarged at tip of first vein.

Redescribed from 4 males and 3 females in the collection of J. M. Aldrich, 4 of these are from Colorado and were taken by C. F. Baker, and 3 from Mount Washington, New Hampshire, taken by Mrs. Slosson.

Type locality.—Sitka, Alaska. Coquillett reports it from several places in Alaska.

No. 45. DOLICHOPUS ALBICILIATUS Loew.

Dolichopus albiciliatus Loew, Cent., vol. 2, 1862, No. 59; Mon. N. Am. Diptera, pt. 2, 1864, p. 31.—Wheeler, Psyche, vol. 5, 1890, p. 338.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 9; Cat. N. Amer. Diptera, 1905, p. 299.—Melander and Brues, Biological Bulletin, vol. 1, 1900, p. 148.

Male.—Length 4.5–5 mm.; of wing 4–4.5 mm. Face narrow, silvery white, a little yellowish just below the antennae. Front blue green. Antennae wholly black; third joint scarcely longer than wide, somewhat conical in outline, a little pointed at tip. Lateral and inferior orbital cilia white, a few nearest the black cilia yellowish; the black cilia descend nearly to the middle of the eye height.

Thorax shining blue green; pleurae dulled with gray pollen. Abdomen green with black incisures and sometimes with distinct coppery reflections; the white pollen on its sides is not very abundant. Hypopygium black; its lamellae (fig. 45*a*) rather large, nearly orbicular in outline but narrowed into the stem, whitish with broad black border on apical portion, which shades into the white, a little jagged on apical margin with one or two branched bristles at lower corner, otherwise fringed on apical edge with long, bent black hairs and on lower edge with short delicate brown hairs.

Coxae and femora black with yellow tips. Fore coxae with white pollen and little black hairs on the anterior surface. Middle and hind femora each with one preapical bristle, the former with short delicate hairs below and the latter ciliate with long black hairs on their lower surface, the longest of these hairs longer than the width of the femora. Tibiae yellow; posterior pair a little thickened, black on inner side and at tip on outer side for one-fourth their length. Fore tarsi a little longer than their tibiae; black from tip of first joint; first joint as long as the remaining four taken together. Middle tarsi longer than their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 45) grayish; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein a little bent at its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle not prominent.

Female.—Face wide, silvery white; hind tibiae yellow with black tips, the black being poorly defined, but extending as a streak up inner surface; middle and hind femora fringed on lower edge with delicate little hairs, which could scarcely be called cilia; costa without an enlargement at tip of first vein; bend in last section of fourth vein distinctly before its middle. Otherwise about as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Redescribed from several males and females taken in the following localities: Illinois, July and Aug.; Mount Washington, New Hampshire; Shelby, Indiana, May 24; Sandusky, Ohio, August 20; Olcott, New York, July 10; Lancaster, New York, May 5; East Aurora, New York, June 9; Toronto, Ontario, July 15.

Type locality.—Illinois. Osten Sacken reports it from western New York, Wheeler from Wisconsin, Aldrich from Michigan and New Jersey, Chagnon from Montreal, Canada, Mrs. Slosson from New Hampshire.

No. 46. DOLICHOPUS ALACER, new species.

Male.—Length 3.25–3.75 mm.; of wing 3–3.75 mm. Face rather narrow, silvery white, narrowest in the middle. Front shining green. Antennae wholly black; third joint scarcely as long as wide, rounded at tip. Proboscis and palpi brownish yellow. Orbital cilia wholly black.

Thorax bright shining green, sometimes with blue or coppery reflection; pleurae and coxae with white pollen. Abdomen green with black incisures and abundant white pollen, which is thickest on its sides. Hypopygium black; its lamellae (fig. 46*a*) of moderate size, somewhat triangular in outline, rather truncate at outer end, white with narrow black border on apical margin, which extends a short distance on lower edge, ending abruptly and expanding on upper corner so as to make the upper angle all black, a little jagged and bristly on apical margin.

Coxae black with yellow tips. Fore coxae with minute black hairs on the anterior surface and the usual bristles at tip. Femora black, often metallic green, their tips yellow. Middle and hind femora each with one preapical bristle, the latter ciliate on lower inner edge with sparse, delicate, whitish hairs for most of their length, the longest of these hairs about two-thirds as long as the width of the femora. Tibiae yellow; posterior pair with black at tip for one-fifth their length, scarcely thickened, the glabrous stripe between the rows of large bristles narrow but distinct; there are about four bristles in each of the rows. Fore tarsi a little longer than their tibiae, first joint as long as the three succeeding joints taken together; fourth and fifth joints of about equal length; third a little longer than the fourth, yellow, a little darker from the tip of the first joint. Middle tarsi equal to their tibiae in length, black from the tip of first joint. Hind tarsi one and a fourth times as long as their tibiae, black. Calypters and halteres yellow, the former with delicate black cilia; these cilia appear whitish in certain lights and there are always some of the hairs that are pale yellow or white.

Wings (fig. 46) a little grayish; costa not enlarged at tip of first vein; last section of fourth vein bent beyond its basal third; hind margin of wing not indented at tip of fifth vein, evenly rounded, the anal angle being nearly obsolete.

Female.—Face as wide as the front, but still not very wide for a female; silvery white; hind femora not ciliated, but with a row of very delicate little hairs on lower inner edge; anal angle of wing slightly more prominent than in the male. Otherwise about as in the male. Middle tibiae with one not very large bristle below, their basitarsi without a bristle above.

Described from 8 males and 7 females from Opelousas, Louisiana, March, April, and May (Pilate, collector), and Lafayette, Indiana, May 16, June 5, and Oct. 6 (all from the collection of J. M. Aldrich); 1 male and 2 females from Slidell, Louisiana, July 2–6 (J. S. Hine).

Type.—Male, Cat. No. 23000, U.S.N.M., from Lafayette, Indiana.

No. 47. DOLICHOPUS PARTITUS Melander and Brues.

Dolichopus partitus MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 135, fig.

Male.—Length 5–5.5 mm.; of wing the same. Face wide, a little less than half as wide as long, yellowish brown, paler below the transverse ridge, at each end of which is a white dot. Front violet, more green around the edges. Antennae (fig. 47*a*) wholly black; third joint a little longer than wide, oval. Orbital cilia wholly black; however, there are always a few yellowish bristles near the proboscis and in one specimen seven of the lower cilia are also yellowish.

Thorax dark green or brownish green with thick brown pollen (in the specimens before me there is no "cupreous vitta" mentioned by Melander and Brues in their description, but this is almost always a variable character in this genus); pleurae dulled with gray pollen. Abdomen green, the incisures narrowly black and edged with coppery reflections. Hypopygium black; its lamellae rather large, oval, still somewhat triangular in outline as they narrow into the stem, whitish in the center, shading into yellow and then into black, often infuscated on more than half their surface, more yellow near the stem, jagged and bristly at apex, otherwise fringed with blackish hairs.

Coxae black; anterior pair with gray pollen and black hairs on their front surface. Femora black with yellow tips, the yellow on the middle ones extends toward their base on the upper edge nearly to the middle. Middle and hind femora each with a row of three or four bristles ending in the usual preapical bristle (these are often broken off so as to leave only one or two); hind femora ciliated below with delicate brown hairs, the longest of which are fully as long as the width of the femora, these hairs extend the whole length of the lower inner edge but are very short at the base and longest near the tip. Fore and middle tibiae yellow; hind tibiae thickened, black, yellow at base for a distance about equal to half the length of their basitarsus and with a yellowish line extending their entire length just inside of the inner row of large bristles, the two rows of bristles on upper surface, although of only ordinary length, are inserted rather close together, there being about 10 or 12 in each row, the glabrous stripe between them distinct. Fore tarsi one and a half times as long as their tibiae, the first two joints taken together about equal to the tibia in length; fifth joint nearly as long as fourth, third a little longer than fourth. Fore and middle tarsi infuscated from their base, becoming black at half their length, the latter about one and a fourth times as long as their tibiae. Hind tarsi wholly black, about one and a half times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 47) grayish; there are brown clouds along the cross-vein and the adjoining portions of the fourth and fifth veins, on the bend of the last section of fourth vein and a rather well-defined spot extending from a point opposite the cross-vein to tip of third vein and from the costa to the third vein; costa with an elongated enlargement at tip of first vein; last section of fourth vein bent at or before its basal third; hind margin of wing a little indented at tip of fifth vein, widest point of wing just back of this notch; anal angle prominent.

Female.—Face a little wider than in the male and more brownish; fore tarsi shorter, about one and a fourth times as long as their tibiae; fore and middle basitarsi more yellow; hind tibiae not much thickened; hind femora not ciliated, wings brown in front of third vein from the root to the tip of third vein, cross-vein clouded about as in the male; costa not enlarged; otherwise about as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Redescribed from 3 males and 1 female from Colorado; 1 of the males was taken by J. M. Aldrich at Marshall Pass, Colorado, July 28, at 10,856 feet elevation, the other specimens were taken by C. F. Baker.

Type locality.—Colorado.

Another female taken at Marshall Pass, Colorado, July 28, 1908, has scarcely a trace of the brown clouding on the wings, except on the veins, but no doubt it belongs to the same species—probably a little immature.

No. 48. DOLICHOPUS SETIFER Loew.

Dolichopus setifer Loew, Neue Beitr., vol. 8, 1862, p. 12; N. Amer. Dipt., pt. 2, 1864, p. 30.—Aldrich, Kans. Univ. Quart., vol. 2, 1893, p. 156.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of N. J., 1909, p. 756.

Male.—Length 4–4.2 mm.; of wing 3.75–4 mm. Face narrow, silvery white. Front bright shining green. Antennae (fig. 48*a*) wholly black; third joint about as long as wide, nearly round in outline, but obtusely pointed at tip; lateral and inferior orbital cilia silvery white, the lower cilia flattened.

Thorax bright shining green, sometimes with traces of two coppery vittae at the front edge of the dorsum (in one specimen from Niagara Falls, New York, there are two violet vittae extending nearly to the middle of the dorsum); pleurae dulled with white pollen. Abdomen shining green with slight bronze reflections and black incisures; the white pollen on its sides abundant. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, white with the apical border black, a little jagged and bristly at lower corner, with delicate, mostly pale hairs on upper and lower edges.

Coxae black with dark yellowish brown tips; fore and middle coxae with white hairs on their anterior surface, the former with the usual black bristles at tip, still they appear almost white in certain lights in many specimens. Femora green with yellow tips. Middle and hind femora each with one preapical bristle, the latter with long black cilia below, which appear white when viewed in certain lights; the longest of these cilia twice as long as the width of the femora. Fore and middle tibiae yellow; hind tibiae thickened, yellow on upper edge for about two-thirds their length, black at tip, on the sides more brown at base or almost black, becoming black at half their length, their bristles long and numerous. Fore tarsi slightly longer than their tibiae, brown; first joint about as long as the three succeeding joints taken together. Middle tarsi about as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black, the first joint with numerous large bristles on upper surface. Calypters and halteres yellow, cilia of the former pale yellow.

Wings (fig. 48) nearly hyaline with a black spot at tip, reaching from the tip of the second vein to the apex of the wing and about as wide as the length of the cross-vein; costa a little enlarged at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing not indented at tip of fifth vein; anal angle obsolete, the wing being narrowed at base; root of wing yellow.

Female.—Face as wide as the front; cilia of lower orbit less flattened than in the male but silvery white; hind basitarsi with only the usual number of bristles; hind tibiae more yellow than in the male and the wings more grayish and without a spot at tip; otherwise about as in the male; middle tibiae with one large bristle below, their basitarsi without a bristle above.

Redescribed from numerous males and females. In the Aldrich collection are specimens from Battle Creek, Michigan; Lake Mills, Wisconsin, Aug., 1893; Ithaca, New York, July, 1901; Waubamic, Parry Sound, Ontario, June 10. I have taken it in Erie County, New York, from July 2 to Aug. 16; at Niagara Falls, New York, June 9, and at Niagara Falls, Ontario, Sept. 28.

Type localities.—District of Columbia and Trenton Falls, New York. Osten Sacken reports it from Newport, Rhode Island. Johnson, Insects of New Jersey, 1909, from several places, taken from May 16 to September 9.

No. 49. DOLICHOPUS RETINENS, new species.

Male.—Length 5–5.5 mm.; of wing 4.5–4.75 mm. Face rather narrow, white, tinged with yellow, more strongly so on upper portion. Front dark shining green. Antennae wholly black; third joint somewhat conical in outline, a little longer than wide, pointed at tip. Orbital cilia wholly black.

Thorax dark shining green, sometimes with brassy reflections on the dorsum; pleurae a little dulled with white pollen. Abdomen shining green with black incisures and bronze reflections, which are mostly on the hind margins of the segments, the white pollen on its sides forms large spots on the lower edges of the segments. Hypopygium black; its lamellae rather large, somewhat elliptical, but irregular in outline, about two-thirds as wide as long, white with narrow black border on apical, upper and lower margins; jagged and bristly at apex, especially on lower corner, otherwise fringed with black hairs.

Coxae black with the tips a little yellowish; anterior pair with silvery pollen and very delicate, but not very short, yellowish hairs on the front surface. Femora black or green, fore and middle pairs broadly, the hind pair narrowly yellow at tip. Middle and hind femora each with one preapical bristle, the latter with pale cilia below, the longest hairs being about as long as the width of the femora, the hairs on their upper edge at base are nearly as long as the cilia below. Tibiae yellow; posterior pair black at tip for one third their length, a little thickened, especially at tip, the glabrous stripe on upper surface distinct and extending over the inner side; they have a row of slender bristles below; bristles of all the tibiae long and those of the anterior pair more numerous than usual. Fore tarsi (fig. 49) a little longer than their tibiae, wholly pale yellow; first joint a little longer than the remaining four taken together and with a row of about ten black bristles on lower inner edge, which are nearly as long as the second joint, last four joints a little compressed and covered with silvery pollen, third and fourth each a little shorter than the preceding joint, fifth a little longer than the fourth. Middle tarsi as long as their tibiae, infuscated from the tip of the first joint, but scarcely black. Hind tarsi wholly deep black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 49*a*) grayish; costa with a knot-like enlargement at tip of first vein; last section of fourth vein a little bent near its middle; hind margin of wing a little indented at tip of fifth vein, rather evenly and broadly rounded; anal angle a little prominent.

Female.—Face as broad as the front, white; hind femora without cilia; fore tarsi as long as their tibiae, darker yellow than in the male, sometimes the joints brown or blackish at tip, first joint with a row of hairs below which are as long as the width of the joint, last four joints without the silvery pollen found in the male; costa not enlarged at tip of first vein; otherwise about as in the male; middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 5 males and 5 females, taken at Lafayette, Indiana, June 3-8, 1915, by J. M. Aldrich.

Type.—Male, Cat. No. 23001, U.S.N.M.

No. 50. DOLICHOPUS REMIPES Wahlberg.

Dolichopus remipes Wahlberg, Vetensk. Akad. Handl., 1838, p. 20.—Zetterstedt, Dipt. Scand., vol. 2, p. 518.—Aldrich, Cat. N. Amer. Diptera, 1905, p. 304.

Male.—Length 5.2 mm.; of wing 5 mm. Face rather wide, its sides nearly parallel, long, extending down nearly to the lower corner of the eyes, silvery white. Front dark shining green. Antennae wholly black; third joint about as long as wide, somewhat orbicular in outline; arista nearly twice the length of the antennae. Lateral and inferior orbital cilia white, long and conspicuous below, about twelve of the upper cilia on each side black.

Thorax dark blue green; pleurae dulled with gray pollen; scutellum fringed with short yellow hairs; it sometimes has violet reflections, which extend upon the posterior part of the thorax. Abdomen green, with black incisures, second segment sometimes bluish, the white pollen on its sides abundant, the sides also have rather long white hair, Hypopygium black or testaceous, sometimes more yellowish toward the apex; its lamellae large, somewhat triangular, white with black border, very narrow except at inner angle where it is broad; a little jagged, bristly on lower corner, otherwise fringed with small hairs placed rather far apart.

Coxae black with yellow tips and white hairs; anterior pair with silvery pollen on the front surface, which is yellow nearly up to its middle. Femora black with green or blue reflections; middle pair with a few white hairs below; hind pair ciliate on lower inner edge with long white hairs, those toward the apex as long or longer than the width of the femora, those near the base shorter; middle and hind femora each with one preapical bristle. Tibiae yellow; posterior pair enlarged at tip and blackened from near their middle, the glabrous stripe above narrow and reaching from the base to beyond the middle. All femora and fore and middle tibiae and tarsi with white or silvery pollen on their anterior surface. Fore and middle tarsi a little longer than their tibiae and wholly yellow, except the extreme tips of all the joints which are blackish. Hind tarsi (fig. 50*a*) deep black, but appearing yellowish in certain lights, this yellow color being caused by minute yellow hairs; first joint with a few rather small bristles above, first and second joints of nearly equal length, the third, fourth, and fifth joints each about three-fourths as long as the preceding, slightly compressed and fringed above with long black hairs. Calypters and halteres yellow, the former with white cilia.

Wings (fig. 50) grayish with the costal edge brown as far as the third vein, fourth and fifth veins and the cross-vein margined with brownish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing slightly indented at tip of fifth vein; anal angle rounded, not very prominent.

Female.—Face broad, white or silvery; hind tibiae yellow, black on apical third; hind tarsi plain, wholly black; all femora and fore and middle tibiae and tarsi with about the same silvery pollen on their front surface as is found in the male; fore and middle tarsi yellow with the tips of all their joints black; middle tibiae with one bristle below, their basitarsi without a bristle above; brown on the wings paler than in the male, and the anal angle more prominent; costa without an enlargement at tip of first vein.

Redescribed from 4 males and 3 females. One male was taken at Olympia, Washington, June 22, 1895, by Trevor Kincaid (now in the Aldrich coll.); 2 males and 1 female taken at Bar Harbor, Maine, July 26, 1919, on water-lily pads, by C. W. Johnson; 1 pair taken at Cranmore, Wisconsin, July 12, 1909, by C. W. Hooker; I took a female at Toronto, Ontario, July 12, 1918.

This species seems to be found on plants that float on the water, such as water lilies; they are never or seldom found on erect plants, either growing in the water or along the sides of the ponds.

Location of type unknown; presumed to be in Stockholm. It was described from northern Europe.

No. 51. DOLICHOPUS SEDULUS, new species.

Male.—Length, 4–5 mm.; of wing, the same. Face wide, covered with dark yellowish pollen, which is sometimes a little golden, at others more brownish. Front shining green, antennae black, first joint very slightly yellowish on the lower apical angle (this color may be caused by pollen); third joint not longer than wide, somewhat orbicular in outline, obtusely pointed at tip. Lateral and inferior orbital cilia white; there are about six black cilia on each side above.

Thorax almost coppery brown on the anterior portion, more green posteriorly, with rather thick brown pollen on the front two-thirds of the dorsum, which leaves shining vittae or spots; pleurae dulled with white pollen. Abdomen green with narrow black incisures and bronze reflections, wholly covered with white pollen, which is thickest on its sides. Hypopygium black; its lamellae (fig. 51*a*) moderately large, somewhat orbicular in outline, but tapering into the stem and a little flattened at tip, white with rather narrow black border on apical margin, where they are jagged and bristly, fringed above with delicate but long black hairs.

Coxae black with yellow tips; anterior pair with white pollen and little black hairs on the front surface. Fore femora black, shading into yellow at tip; middle femora mostly yellowish, black at base and along upper and lower edges for a greater or less distance, with one preapical bristle and often a smaller one a little nearer the base; hind femora black, their inner surface more yellow, with one preapical bristle, without cilia below but fringed with rather long black hairs on upper edge. Tibiae yellow; posterior pair black at tip for nearly one-fourth their length, slightly thickened, a more or less distinct brown line on the inner side of central portion, the glabrous stripe on upper surface broad, extending from the outer row of bristles, well upon the inner surface so as to include the inner row of bristles. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, this joint fully as long as the three succeeding taken together; fourth and fifth joints of nearly equal length, third a little longer. Middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black, about one and a third times as long as their tibiae. Calypters and halteres yellow, the former with very black cilia.

Wings (fig. 51) grayish, slightly darker in front; costa with a slight knot-like enlargement at tip of first vein, still tapering a little to its tip; last section of fourth vein a little bent at or just beyond its basal third, sometimes it is a little more sharply bent and bears a stump of a vein at the posterior angle of the bend; hind margin of wing scarcely indented at tip of fifth vein; wing of rather parallel width, the anal angle being prominent.

Female.—Face wide, brownish gray to whitish in color; hind tibiae not thickened, without the brown stripe on inner surface, and the glabrous stripe on upper surface not conspicuous; wings with the anal angle less prominent, although of somewhat equal width. Otherwise about as in the male. Middle tibiae with one large bristle below, their basitarsi without a bristle above, but with several very small ones below.

Described from 6 males and 2 females; 5 of the males and the 2 females were taken at Moscow, Idaho, June 19, 1900; 1 male was taken at Lafayette, Indiana, August 13. All were taken by J. M. Aldrich.

Type.—Male, Cat. No. 23002, U.S.N.M., from Idaho.

No. 52. DOLICHOPUS GROENLANDICUS Zetterstedt.

Dolichopus groenlandicus ZETTERSTEDT, Diptera Scand., vol. 2, 1843, p. 528.

Male.—Length 4.3–4.8 mm.; of wing 4.8–5 mm. Face moderately wide, yellowish brown. Front bronze brown or more or less greenish, not very bright. Antennae wholly black; third joint rather large, a little longer than wide, oval, rounded at tip. Palpi black. Orbital cilia wholly black.

Thorax bronze brown with slight green reflections, dulled with brown pollen on the dorsum; pleurae with grayish pollen. Abdomen bronze brown, or green with dark bronze reflections, the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 52*a*) of moderate size, somewhat quadrilateral in outline, brown but not very dark, the edges only slightly darker, jagged and bristly on apical margin, fringed above with rather long and slender brown hairs.

Coxae black; anterior pair with conspicuous little black hairs. Fore femora blackish on basal half, yellow apically, the black variable in extent. Middle femora yellow with a black or brownish streak on lower edge at base, with one preapical bristle in front and a small bristle close to tip on posterior side. Hind femora black with extreme tip yellow, with one preapical bristle, the hair on upper edge at base long, not ciliated below. Tibiae yellow; middle pair with one long bristle below; posterior pair a little thickened, black at tip for one fourth their length, with strong bristles, the glabrous stripe on upper surface distinct, inner side with a wide glabrous stripe, which reaches the whole width at basal third, where there is a short brown streak. Fore tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, this joint as long as the three following taken together, fourth and fifth of nearly equal length, third a very little longer than the fourth. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint, which is dark yellow and without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 52) rather dark grayish; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein bent before its middle, nearly straight and parallel with third beyond the bend, the third being only slightly bent backward at tip; hind margin of wing not indented at tip of fifth vein; anal angle of wing moderately prominent.

Female.—Agrees with the male in general color and in the formation of the wings and legs: the face is wide and dark grayish; the third antennal joint is a little pointed at tip.

Redescribed from 4 males and 1 female; 1 of the males was taken in Colorado, by Baker; all the other specimens were taken in Labrador; 1 male at Ungava Bay, July 29, by L. M. Turner (National Museum); the others, from the collection of C. W. Johnson, were taken at Nain, August 18, by Owen Bryant.

There seems to be no doubt of the determination of these specimens.

Type.—In the University of Lund, Sweden.

No. 53. DOLICHOPUS INCONGRUUS Wheeler.

Dolichopus incongruus WHEELER, Psyche, vol. 5, 1890, p. 338.

Male.—Length 4.5–5 mm.; of wing 4.25–4.75 mm. Face narrow, silvery white. Front green or blue-green, shining. Antennae wholly black; third joint three times as long as wide, pointed at tip. Proboscis and palpi black with black hairs. Orbital cilia wholly black.

Thorax bright green, shining, dorsum with blue and bronze reflections, the latter forming more or less distinct vittae; pleurae more black, dulled with brownish gray pollen. Abdomen shining green with blue or bronze reflections. Hypopygium black; its lamellae (fig. 53*a*) small, somewhat triangular in outline with the apex rounded and not jagged, fringed with delicate hairs, whitish with a black border.

Coxae black with yellow tips; anterior pair with white pollen and little black hairs on the front side. Basal two-thirds of fore femora black, apical third yellow. Middle femora yellow, sometimes a little blackened at base on upper and lower edges. Hind femora black with yellow tips, not ciliated below, with a few longer hairs at base on upper edge. Middle and hind femora each with one preapical bristle; tibiae yellow, posterior pair a little stouter than the others, with the apical third black, the black sometimes extending nearly to their middle on inner side, not sharply defined and with an elongated brown spot at basal third of inner side; the glabrous stripe on upper surface distinct and extending inside of the inner row of bristles. Fore tarsi brownish yellow, as long as their tibiae, the basitarsi as long as the remaining four joints taken together, fourth joint very slightly shorter than the fifth. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi one and a third times as long as their tibiae, wholly deep black. Calypters and halteres yellow, the cilia of the former black (Doctor Wheeler states in his description that these cilia are yellow, but our specimens agree with his description in all other points and as there are some long yellow hairs back of the black cilia he probably saw these, the true cilia having been broken off, or perhaps there are specimens with the cilia all yellowish).

Wings (fig. 53) grayish; costa only a little enlarged at tip of first vein; last section of fourth vein bent at its basal third; hind margin of wing not or scarcely indented at tip of fifth vein, evenly rounded, the anal angle being rounded, not prominent.

Female.—I have no female which seems to be long here, although two of those I have placed with the next species (*remus*) were taken with males of this species, still as they have two preapical bristles on the middle and hind femora they seem to belong with *remus* the male of which has two bristles while *incongruus* only has one, this should be the best character to separate the females by.

Redescribed from 5 males; 1 taken at Colden, New York, May 31; 1 at Ellis, New York, June 13; and 2 at Protection, New York, June 16; 1 at South Wales, New York, June 23.

Type.—In American Museum of Natural History.

No. 54. DOLICHOPUS REMUS, new species.

Male.—Length 4 mm.; of wing the same. Face narrow, white, a little wider and more yellowish on upper part. Front bright shining green. Antennae wholly black; third joint large, nearly three times as long as wide, somewhat elliptical in outline, but nearly straight above and rounded below, pointed at tip. Orbital cilia wholly black.

Thorax dark green, very shining, with more or less coppery reflections which form vittae on the anterior edge of the dorsum, where there is a little white pollen; pleurae more blackish with grayish pollen. Abdomen dark shining green with black incisures and coppery reflections. Hypopygium black; its lamellae (fig. 54*a*) very small, oval, whitish with a black border, fringed with black hairs, not jagged at tip.

Coxae black with yellow tips; anterior pair with white pollen and little black hairs on the front surface. Fore femora with basal two thirds black; middle femora yellow with about basal fourth blackish; hind femora black with the tip narrowly yellow, nearly bare below. Middle and hind femora each with two preapical bristles, placed one before the other. Tibiae yellow; posterior pair black at tip for one-sixth their length, a little stouter than the others, slightly swollen below before their middle, at which point there is a brown spot on inner surface; the glabrous stripe between the large bristles not well marked, but just inside of the inner row of bristles is a narrow glabrous stripe extending three-fourths their length and expanding to include the brown spot mentioned above; bristles of the tibiae rather short. Fore tarsi about as long as their tibiae, their joints of decreasing length, yellowish, a little darker toward their tips. Middle tarsi (fig. 54*c*) one and a half times as long as their tibiae (fig. 54*b*), black from the tip of the first joint; second, third, and fourth joints each a little shorter than the one preceding it, fourth a little compressed, widest in the middle; fifth joint short, about one-half as long as the fourth. Hind tarsi one and one-third times as long as their tibiae, deep black. Calypters and halteres yellow, cilia of the former black.

Wings (fig. 54) grayish, very slightly tinged with brown in front of third vein; of somewhat equal width; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein a little bent just before basal third; hind margin of wing scarcely indented at tip of fifth vein, anal angle prominent.

Female.—Face wide, grayish white; third antennal joint a little longer than wide, pointed at tip, rather large for a female; fore and middle femora black with their tips rather broadly yellow; middle tibiae and tarsi black, the former with one large and one small bristle below, the latter a little longer than their tibiae; first joint about as long as the three succeeding joints taken together and without a bristle above; fore tarsi mostly blackish; bend in last section of fourth vein at its basal third, being a little farther from the cross-vein than in the male; wings more broadly rounded on hind margin than in the male and more strongly tinged with brown in front of third vein; costa without an enlargement at tip of first vein.

Described from 4 males and 5 females. One male was taken at Algonquin, Illinois (Nason); 1 at Ithaca, New York; 1 at Portage, New York, July 1; and 1 at Toronto, Ontario, July 4. One female was taken at Gowanda, New York, June 7; 1 at East Aurora, New York, June 9; 2 at Protection, New York, June 16; and 1 at Ridgeway, Ontario, July 15.

Type.—Male, Cat. No. 23003, U.S.N.M., from Ithaca, New York.

This species is very much like *incongruus* Wheeler, having the same large and elongated third antennal joint. The legs of the two species are colored alike and both have the same small lamellae which are shaped and colored about alike, they also have the bend in the last section of fourth vein at or just before its basal third; but this species differs in having the fourth joint of middle tarsi compressed and widened, in the middle and hind femora each having two preapical bristles, and in having the posterior tibiae narrowly black at tip. The next species, *adultus* is even more closely related to *remus* than is *incongruus*, as it has the same narrow black tip to hind tibiae, they differ only in the plain middle tarsi of *adultus*, and in its having only one preapical bristle, it differs from *incongruus* in the narrow black tip of the hind tibiae.

No. 55. DOLICHOPUS ADULTUS, new species.

Male.—Length 5 mm.; of wing 4.5 mm. Face rather wide, narrowed a little below, silvery white, a little grayish. Front blue green, sometimes with violet reflections at vertex. Antennae (fig. 55*b*) wholly black; third joint large, three times as long as wide, pointed at tip; arista about as long as the antennae, inserted at apical third of upper edge. Orbital cilia wholly black.

Thorax dark green with coppery reflections; dorsum very shining; pleurae dulled with gray pollen. Abdomen a lighter green with black incisures, dulled with white pollen, which forms large spots on the sides of the segments. Hypopygium black with coppery reflections on basal part; its lamellae (fig. 55*a*) small, dark brownish to whitish with the edges and tip black, fringed with black hairs, somewhat triangular in outline with a rather sharp point at outer corner.

Coxae black with the tips narrowly yellow; anterior pair with white pollen and little black hairs on the front surface. Fore and hind femora black with the tips of the former broadly, of the latter narrowly, yellow. Middle femora black at base, becoming yellow at about basal third on upper and lower edges, the yellow extending nearer the base on the sides. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Tibiae yellow; posterior pair black at tip for less than one-fifth their length; a slight swelling just before their middle can be seen when viewed from above, and the tips are a little thickened; the glabrous stripe on upper edge is wide, reaching narrowly inside of the inner row of bristles. Lower surface of middle tibiae with one bristle near apical third and one near basal third. Fore and middle tarsi black from the tip of the first joint, the former about as long as their tibiae, fourth and fifth joints of nearly equal length, third a little longer, the middle tarsi one and a fourth times as long as their tibiae. Hind tarsi wholly black. Calypters pale yellow with black cilia. Halteres yellow, their stems darker.

Wings (fig. 55) grayish, slightly tinged with brown in front of second vein; root of wing yellow; costa very slightly enlarged at tip of first vein; last section of fourth vein bent at basal third, beyond which it is very nearly parallel with third vein; hind margin of wing slightly indented at tip of fifth vein, rather evenly rounded; anal angle rather prominent.

Female.—Face nearly as broad as the front, white, a little silvery; front a beautiful violet, narrowly edged with green along the orbits; legs and tarsi black with knees, trochanters, fore and middle tibiae and base of fore tarsi yellowish; wings strongly tinged with brown in front of fourth vein and along the cross-vein.

Described from 1 pair from Lewiston, New York, May 31; 1 female from Colden, New York, May 31; 1 female from East Aurora, New York, May 24; 1 female from Hamburg, New York, June 6; 1 male from Framingham, Massachusetts, May 28; and 1 male from Ocean County, New Jersey.

Type.—Male, Cat. No. 23004, U.S.N.M., from Lewiston, New York.

No. 56. DOLICHOPUS CALIFORNICUS, new species.

Male.—Length 5 mm.; of wing the same. Face rather wide, its sides nearly parallel, rounded below, reaching down to the lower corner of the eyes, silvery white. Front shining green. Antennae black with a large yellowish lobe on lower inner corner of first joint; second joint a little yellowish on inner side; third joint about as long as wide, pointed at tip; arista longer than the antennae, inserted a little above the point of the third joint. Upper orbital cilia black, lateral and inferior cilia silvery white, becoming flattened and very conspicuous below.

Thorax dark green, sometimes more blue, with a little white pollen along the anterior edge of the dorsum; pleurae dulled with white pollen. Abdomen green with coppery reflections on the hind margins of the segments, incisures blackish, sides of segments with spots of white pollen. Hypopygium black; its lamellae (fig. 56*a*) rather large, somewhat oval in outline, whitish with black border, jagged and bristly on apical margin, otherwise fringed with rather long hairs.

Coxae black; anterior pair with yellow tips, the front surface nearly bare with a few black hairs along inner edge, and covered with white pollen. Anterior femora black with the apical third yellow. Middle femora black at base, sometimes for nearly half their length, yellow apically, with one preapical bristle. Hind femora black on basal half or more above, on the lower edge the yellow sometimes extends nearly to the base, fringed on upper outer edge with long bristle-like hairs which increase in length and size and end in the usual preapical bristle. Fore and middle tibiae yellow. Hind tibiae black, thickened, a little fusiform, with a glabrous stripe above between the rows of large bristles. All femora and tibiae with more or less white pollen. Fore tarsi about as long as their tibiae, very slightly compressed. Middle tarsi a little longer than their tibiae. Middle and hind tarsi black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with white cilia.

Wings (fig. 56) slightly tinged with gray; costa with a knotlike enlargement at tip of first vein; last section of fourth vein rather sharply bent at its basal third; tips of third and fourth veins rather far apart; hind margin of wing deeply notched at tip of fifth vein; anal angle rounded, not very prominent.

Described from 4 males; 1 was taken at Kanaka Bay, San Juan Island, Washington, May 31, 1906, by J. M. Aldrich; 2 I took at Sacramento, California, June 4, 1915, and 1 taken by E. P. Van Duzee, at Crystal Lakes, San Mateo County, California, June 25, 1916.

Type.—Male, Cat. No. 23005, U.S.N.M., from Sacramento, California.

No. 57. DOLICHOPUS UMBROSUS, new species.

Male.—Length, 4.7 mm.; of wing, 4.5 mm. Face wide, silvery white, slightly tinged with yellow on upper part. Front dark shining green. Antennae wholly black; third joint large, twice as long as wide, pointed at tip, nearly straight above, rounded below to the tip; arista a little longer than the antennae, inserted just beyond the middle of the third joint. Orbital cilia wholly black.

Thorax dark green; anterior part of dorsum dull in type specimen, apparently from brown pollen, posterior part and scutellum shining; pleurae dulled with whitish pollen. Abdomen dark green with slight coppery reflections, incisures black. Hypopygium black, very small; its lamellae dark yellowish, edged with black and fringed with short black hairs, somewhat oval in outline, but narrowed into the stem; the hypopygium (fig. 57*a*) including its lamellae only reaching the posterior ventral edge of the second abdominal segment.

Coxae black with silvery pollen, their extreme tips and trochanters yellow; fore coxae with black hairs on the anterior surface. Fore and hind femora black, the former broadly, the latter narrowly yellow at tip. Middle femora black at base, dark yellow at apex, the yellow extending nearly to the base on the sides, but the black reaching three-fourths their length on lower edge and shading into brownish yellow. Middle and hind femora each with two preapical bristles, placed one before the other, the latter not ciliated below, but with a row of rather long hairs on lower outer edge. Tibiae yellow; posterior pair not thickened, black for one-fourth their length, the black not well defined, the glabrous stripe on upper edge distinct. Fore tarsi a little longer than their tibiae, dark yellow, blackish above from the tip of the first joint. Middle and hind tarsi wholly black; the former about one and a half times as long as their tibiae, with fourth joint very slightly flattened, more than twice as long as fifth, their basitarsi without a bristle above.

Calypters pale yellow with black cilia, which are decidedly yellow in certain lights; halteres yellow.

Wings (fig. 57) very slightly tinged with brown in front; veins dark-brown, yellow at the root of the wings; costa black, not enlarged at tip of first vein; last section of fourth vein only a little bent near basal fourth, from which point the third and fourth veins approach each other and are nearly straight, their tips rather close together; hind margin of wing slightly indented at tip of fifth vein; anal angle rounded, still rather prominent.

Female.—Face wider than that of the male, third antennal joint about as long as wide; trochanters brown or black; middle femora black with yellow tip; hind femora with one preapical bristle; fore and middle tarsi wholly yellow; hind tibiae blackened at tip for about one-third their length. Wings as in the male, except that the bend in fourth vein is beyond basal third and the tips of third and fourth veins are a little farther apart.

It may prove that this is a different species from the male described above, as it has but one preapical bristle and the middle tarsi are yellow. Still the wing venation would indicate that they belong together.

Described from one male and one female taken in Polk County, Wisconsin, by C. F. Baker in July.

Type.—Male, Cat. No. 23006, U.S.N.M.

No. 58. DOLICHOPUS LATICORNIS Loew.

Dolichopus laticornis Loew, Neue Beitr., vol. 8, 1861, p. 12; Mon. N. Amer. Diptera, pt. 2, 1864, p. 29.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 7.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length, 4.2–5 mm.; of wing, 3.5–4 mm. Face rather wide, scarcely narrowed below, silvery white, sometimes a little yellowish just below the antennae. Front green or blue green. Antennae (fig. 58*a*) wholly black; third joint large, more than twice as long as wide, pointed at tip; arista inserted near apical third, about as long as the antennae. Orbital cilia wholly black.

Thorax green, sometimes with coppery reflections which form indistinct vittae on the dorsum; pleurae dulled with gray pollen. Abdomen dark green, sometimes with coppery reflections, its sutures narrowly black; the white pollen on its sides forms large spots on the lower edges of the segments. Hypogyium black; its lamellae of moderate size, somewhat triangular in outline, rather acutely pointed at tip, white with a very narrow dark border which is more distinct near the apex, not jagged on apical margin, fringed with small dark hairs.

Coxae black with yellow tips and white pollen; anterior pair with minute white hairs on the front surface. Fore and hind femora black with yellow tips; middle femora yellow, blackened at base for one-fourth to one-third their length. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Tibiae yellow; posterior pair black at tip for one-fifth their length, this black rather sharply defined, the glabrous stripe on upper surface broad, extending well upon the inner side and including the inner row of large bristles; they are slightly swollen on inner side near the middle. Fore tarsi as long as their tibiae, mostly yellow, but darker from the tip of the first joint. Middle tarsi about equal to their tibiae in length, black from the tip of the first joint. Calypters and halteres pale yellow, the former with white cilia.

Wings (fig. 58) a little grayish; costa with a very small knotlike enlargment at tip of first vein; bend in last section of fourth vein small and near its basal third; beyond this bend the third and fourth veins are parallel and straight; hind margin of wing not indented at tip of fifth vein; anal angle rounded, not very prominent, the wings of somewhat parallel width.

Female.—Face wide, silvery white; front sometimes violet; third antennal joint only a little longer than wide; middle femora black with apical fourth yellow; hind tibiae black at tip for one-third to three-fourths of their length, and on inner side nearly to the base; sometimes black with the base yellow on upper edge to near the middle; the black is never well defined; cilia of calypters usually more or less black but with some yellow or white hairs, sometimes wholly white.

Redescribed from 4 males and 3 females; 1 pair was taken at Battle Creek, Michigan, by J. M. Aldrich; 1 male at New Bedford, Massachusetts, May 17 (Hough); 1 female at Toronto, Ontario, May 16 (all these are in the collection of J. M. Aldrich); 2 males and 1 female at Beverly, Massachusetts, June 1, in the United States National Museum.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 59. DOLICHOPUS NODIPENNIS, new species.

Male.—Length, 5.2 mm.; of wing, 5 mm. Face of moderate width, silvery white. Front dark green, shining. Antennae (fig. 59*a*) wholly black; third joint large, nearly twice as long as wide, pointed at tip, arista inserted a little beyond the middle, longer than the antennae.

Thorax dark green, shining, sometimes with coppery reflections on lateral edges and along the central line; pleurae more black, dulled with gray pollen. Abdomen dark green with coppery reflections near the hind margins of the segments, incisures narrowly black. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, but rounded at tip, whitish or yellowish, the edge scarcely darker, not jagged or bristly, fringed with delicate brown hairs.

Coxae black with yellow tips and thin silvery pollen, anterior pair with a few minute white hairs on the front surface. Fore and hind femora black with tips and extreme base yellow. Middle femora and their trochanters yellow. Middle and hind femora each with one preapical bristle. Fore and middle tibiae and tarsi wholly yellow, the latter scarcely darker at tip. Fore tarsi scarcely as long as their tibiae, fourth joint shorter than fifth. Middle tarsi about one and a fourth times as long as their tibiae, the tibiae being longer than their femora. Hind tibiae mostly black, upper edge yellowish at base for about one-fourth their length and shading into the black, the glabrous stripe on upper surface rather wide, extending inside of the inner row of large bristles for a short distance near basal third; their hairs long and dense, especially on apical two-thirds. Hind tarsi shining black, with stiff black hairs. Calypters, their cilia, and the halteres pale yellow.

Wings (fig. 59) grayish; costa with a very distinct enlargement at tip of first vein; last section of fourth vein only a little bent at its basal third, from which point the third and fourth veins gradually converge, still their tips are not very close together; hind margin of wing a little notched at tip of fifth vein, back of this notch it widens a little; anal angle rather prominent.

Female.—Face wide, grayish white; all femora black with extreme base and tips yellow; fore tibiae and tarsi yellow; middle tibiae and tarsi black with the articulations yellowish; hind tibiae and tarsi wholly black; notch at tip of fifth vein not as conspicuous as in the male; costa without an enlargement at tip of first vein; wings tinged with brownish in front and along the veins; cilia of the calypters more or less black.

Described from 3 males and 3 females. Two males and 1 female were taken at Montreal, Quebec, June 3 and 23; 1 pair were taken by me at East Aurora, New York, June 2; and 1 female at Ridgeway, Ontario, July 15.

Type.—Male, Cat. No. 23007, U.S.N.M., from East Aurora, New York.

This differs from the male of *laticornis* Loew in having the hind tibiae much darker, clothed with much longer hair, and its glabrous stripe narrower; the middle femora wholly yellow, not black at base; costal enlargement at tip of first vein more conspicuous; third and fourth veins distinctly convergent at their tips. The females differ in having the middle tibiae black with extreme tips yellow, and the hind tibiae wholly black; the third and fourth veins convergent as in the male, while in *laticornis* they are parallel at tip.

No. 60. DOLICHOPUS SOLIDUS, new species.

Male.—Length 4.75 mm.; of wing 4.5 mm. Face wide, covered with white pollen, which has a slight yellowish tinge. Front shining green. Antennae black, normal; third joint a little longer than wide, somewhat pointed at tip. Lateral and inferior orbital cilia whitish, about seven of the upper cilia on each side black.

Thorax dark green, somewhat dulled with brown pollen on the dorsum; pleurae dulled with white pollen. Abdomen green with coppery reflections, black incisures and white pollen; the latter forms large spots on the sides on the segments. Hypopygium black; its lamellae of moderate size, oval but narrowing into the stem, whitish with a black border, which is rather broad on apical margin, very narrow on upper and lower edges, but extending to the stem, somewhat jagged and bristly at apex, fringed above with delicate hairs.

Coxae black with their extreme tips yellowish; anterior surface of fore coxae with white pollen and little hairs which appear to be partly black and partly white. Fore femora black with their tips broadly yellow. Middle femora yellow with a blackish line below on basal two-thirds. Hind femora yellow with their upper surface black nearly to the tip. Middle and hind femora each with one preapical bristle, the latter ciliate on lower inner edge with yellow hairs which have a blackish appearance in certain lights and are scarcely as long as the width of the femora. Fore and middle tibiae yellow. Hind tibiae yellow at base becoming black at tip, the apical half being mostly black. Fore and middle tarsi black from the tip of the first joint (the apical joints of both are missing in the type). Hind basitarsi black (other joints missing). Calypters and halteres yellow, the former with black cilia.

Wings (fig. 60) tinged with brownish; costa with an elongate, but small enlargement at tip of first vein; last section of fourth vein bent at its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent.

Described from 1 male taken on the Alaska-Yukon boundary, longitude 141°; latitude 69° 10′, August 14–17, 1912, by J. M. Jessup.

Type.—Male, Cat. No. 23008, U.S.N.M.

No. 61. DOLICHOPUS BRYANTI, new species.

Male.—Length 4.2 mm.; of wing 3.7 mm. Face wide, narrower below, silvery white. Front dark shining green. Antennae wholly black; third joint about as long as wide, conical in outline; arista rather short. Lower half of the orbital cilia white, upper half mostly black.

Thorax dark green, somewhat dulled with brown pollen on the dorsum. Abdomen green, the white pollen of the sides extends over the dorsum. Hypopygium black; its lamellae rather small, somewhat triangular in outline but rounded at tip, whitish with black apical border, not much longer than wide.

Coxae black, scarcely yellow at tip. Fore femora black with their tips broadly yellow. Middle and hind femora yellow, each with one preapical bristle; middle pair narrowly black on the lower edge of their basal half or more; posterior pair black at tip for a considerable distance, but the yellow extending nearly to their tips on lower edge and ciliated on lower inner edge with short yellow hairs (sometimes appearing blackish), which are about one-third as long as the width of the femora. Fore and middle tibiae yellowish; posterior tibiae black, a little yellowish at base, the black shading into the yellow, slightly thickened. Fore tarsi one and a fourth times as long as their tibiae; fore and middle tarsi blackened from the tip of the first joint; middle basitarsi without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 61) grayish; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein very slightly bent near its middle; hind margin of wing evenly rounded, the anal angle being only slightly developed.

Described from 2 males from Labrador taken by Owen Bryant; 1 at Great Caribou Island, July 27; the other at Nain, July 18; 1 female at Ungava Bay, Labrador, July 29; and 1 pair at Hopedale, Labrador, taken by Packard.

Holotype in the collection of C. W. Johnson, taken on Great Caribou Island, Labrador.

Allotype.—Female, Cat. No. 23009, U.S.N.M., from Ungava Bay (L. M. Turner).

No. 62. DOLICHOPUS AMNICOLA Melander and Brues.

Hygroceleuthus amnicola Melander and Brues, Biol. Bull., vol 1, p. 130, fig.

Male.—Length 4.5–5 mm.; of wing 4.5 mm. Face rather wide, pale golden yellow, long and rounded below. Front green with bronze reflections in the center. Antennae long; first joint long, yellow, usually black above; second joint black on upper half or two-thirds, yellow below; third joint black, longer than wide, somewhat oval but a little pointed at tip. Proboscis black. Palpi yellow with black hairs. Lateral and inferior orbital cilia yellow, about twelve of the upper cilia on each side black.

Thorax black with bronze reflections, which sometimes form narrow vittae on the dorsum, the anterior portion of which has considerable yellowish gray pollen; pelurae dulled with white pollen. Abdomen green with coppery reflections, tergum with white pollen which is scarcely thicker on the sides. Hypopygium black; its lamellae of moderate size, somewhat oval in outline, yellowish with a black border on the apical and upper margins, the rounded apex jagged and bristly, fringed above with bristle-like hairs, below with delicate yellow hairs.

Coxae black with yellow tips; anterior pair with green reflections, white pollen and rather long black hairs on the front surface. Fore femora black on basal two-thirds or three-fourths, yellow at tip. Middle and hind femora yellow, usually a little blackened at base below, the former with one preapical bristle, the latter with a row of three or four bristles of increasing length, ending in the usual preapical bristle, nearly bare below. Tibiae yellow; fore and middle ones sometimes a little darkened at tip, the former with four large bristles on lower outer edge, the latter with two large bristles below; posterior tibiae black at tip for one-fifth to one-fourth their length, a little thickened and with a row of about five bristles below, which are nearly as large as those above. Fore tarsi a little longer than their tibiae, blackened from the tip of the first joint, which is as long as the three succeeding joints taken together. Middle tarsi only a little longer than their tibiae, first two joints yellow, last three black, still the third is sometimes yellow for half its length; middle basitarsi without a bristle above. Hind tarsi black, sometimes with the extreme base of the first joint yellowish. Calypters and halteres yellow, the former with black cilia.

Wings dark grayish, tinged with yellowish gray in front of third vein and narrowly along all the posterior veins; costa scarcely enlarged at tip of first vein; last section of fourth vein sharply bent before its middle, its tip a considerable distance before the apex of the wing; third vein bent backward so that it runs nearly parallel with the costa and forms a very acute angle with it at its tip, which is close to the tip of fourth vein; hind margin of wing indented at tip of fifth vein, and with a small sinus before the anal angle, which is prominent.

Female.—Face wider than in the male and more grayish; wings more evenly rounded on the hind margin; third vein not bent backward quite so much at tip, anal angle not quite so prominent and without the sinus before it, leaving the anal angle rounded, while in the male it is almost lobe-like; bristles of the legs and feet about as in the male.

Redescribed from 10 males and 15 females in the collection of J. M. Aldrich and taken at the following locations: Wells, Nevada, July 12; Oxford, Idaho, July 12 (Aldrich), and Pine Lake, southern California.

Type locality.—North Park, Colorado. J. M. Aldrich reports it from Cache County, Utah.

The above description agrees with the type specimen in the American Museum in New York, which is a female.

No. 63. DOLICHOPUS OPPORTUNUS, new species.

Male.—Length 5.3 mm.; of wing 5 mm. Face rather narrow, widening a little from the middle upward, silvery white. Front shining green. Antennae (fig. 63*b*) black, third joint small, but little longer than wide, rounded at tip. Orbital cilia wholly black.

Thorax green with slight coppery reflections on the sides of the dorsum; the carina running from the humeri to the root of the wings yellowish brown with a small reddish spot at the humeral end; pleurae more black with gray pollen. Abdomen green with coppery reflections, its incisures narrowly black; extreme lower edges of the dorsum on first and second segments more or less yellowish; the white pollen on its sides forms spots on the sides of the segments. Hypopygium black; its lamellae (fig. 63*a*) rather large, rounded, but narrowing into the stem, about as long as broad, whitish with a very narrow brown margin above and wider black border on the jagged apical margin, which is fringed with long bristlelike hairs.

Coxae black with yellow tips and silvery pollen; anterior pair with delicate white hairs on the front surface. Anterior femora black with their tips narrowly yellow. Middle femora yellow, blackened at base on upper and lower edges for about one-third their length. Posterior femora yellow, with the tip and base black and narrowly black on upper edge. Middle and hind femora each with two preapical bristles, placed one before the other, the latter nearly bare below. All tibiae yellow; the posterior pair black at tip for one-fifth their length, slightly thickened apically. Fore and middle tarsi about as long as their tibiae, brown from the tip of the first joint, the former with the joints of regularly decreasing length, first joint scarcely as long as the three succeeding joints taken together. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 63) tinged with brown, which color is deeper in front of the third vein, and with distinct clouds on the cross vein and at the bend in the fourth vein; costa scarcely thickened at tip of fifth vein; last section of fourth vein bent at its second fifth; beyond this bend the third and fourth veins are nearly parallel; hind margin of wing a little indented at tip of fifth vein, rather evenly rounded, the anal angle not being very prominent.

Female.—Face wide, white; third antennal joint nearly round in outline, still a little pointed at tip; fore coxae with white hairs on the anterior surface, mixed with a few black ones along the inner edge. Otherwise about as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 3 males and 4 females, taken by J. M. Aldrich at Hagerman, Idaho, July 1, 1900.

Type.—Male, Cat. No. 23010, U.S.N.M.

No. 64. DOLICHOPUS HUMILIS, new species.

Male.—Length 4.5 mm.; of wing 4.25 mm. Face wide, covered with whitish pollen. Front greenish black with a little brown pollen below. Antennae wholly black; first joint unusually long but not thickened; second joint rather long, slender at base, wider at tip; third joint but little longer than wide, scarcely as long as the first joint; rounded at tip; cilia of lower orbit white.

Thorax blackish, scarcely tinged with green, a little dulled with brown pollen. Abdomen dark green. Hypopygium black; its lamellae rather large, oval, whitish, with rather wide black margin.

Coxae black with yellow tips; anterior pair with white hairs on front surface, and a few black ones along inner edge. Anterior femora black at base, becoming yellow toward the apex; (middle tibiae missing, but likely to be yellow); hind femora yellowish, darker at base. Tibiae yellow; posterior pair with their tips black for one-fifth their length and a little swollen. Fore tarsi about as long as their tibiae, black from the tip of the first joint, fourth and fifth joints of about equal length; hind tarsi wholly black. Calypters and halteres yellow, the former with white cilia.

Wings a little grayish; costa with a large elongated enlargement at tip of first vein; last section of fourth vein with a rather sharp bend at its basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent; outer part of wing very wide, the wing being narrowed at base.

Described from 1 male taken on the Alaska-Yukon boundary, longitude 141°; latitude 69° 20′, August 4–8, 1912, by J. M. Jessup.

This species is remarkable for the long, slender first antennal joint, which separates it from all related species known to me.

Type.—Male, Cat. No. 23011, U.S.N.M.

No. 65. DOLICHOPUS BREVICAUDA, new species.

Male.—Length 4 mm.; of wing 3.5 mm. Face wide, only a little narrowed below, white. Front shining green. Antennae (fig. 65*b*) wholly black; third joint not longer than wide, a little pointed at tip. Lateral and inferior orbital cilia whitish, about ten of the upper cilia on each side black.

Thorax shining green with bronze reflections; pleurae a little dulled with white pollen. Abdomen green with coppery reflections and white pollen, which is rather thick on its sides. Hypopygium black, small, not much longer than its small lamellae (fig. 65*a*) which are yellowish with rather narrow black border on apical margin, they are somewhat triangular in outline, but with the upper angle rounded.

Coxae black with their extreme tips yellowish; anterior pair with minute black hairs on the front surface. Fore femora black with yellow tips; middle ones black at base, gradually becoming yellow, the apical half being mostly yellowish; hind femora black on upper half, more yellowish on lower half. Middle and hind femora each with one preapical bristle, the latter not ciliate below. Tibiae yellow; middle ones slightly darkened at tip, with one long slender bristle below; posterior pair a little thickened at tip, black apically for one fourth their length, which is rather sharply defined. Fore tarsi black fron the tip of the first joint, one and a fourth times as long as their tibiae, first joint about as long as the three following joints taken together, fourth joint shorter than fifth. Middle tarsi black from the middle of the first joint, about one and a fourth times as long as their tibiae, their basitarsi without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the cilia of the former black.

Wings (fig. 65) grayish; costa not enlarged at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing not indented at tip of fifth vein; evenly rounded; the anal angle not prominent.

Described from 1 male from Mount Washington, New Hampshire, on August 16, 1916, taken by C. W. Johnson, at an elevation of 5,000 feet.

Type.—In the collection of the Boston Society of Natural History.

No. 66. DOLICHOPUS VARIPES Coquillett.

Dolichopus varipes Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 425.—Aldrich, Cat. N. Amer. Diptera, 1905, p. 305.

Male.—Length, 4 mm.; of wing, the same. Face rather narrow; palpi and face covered with dense, yellowish pollen. Front shining green. Antennae black with the first two joints yellow on lower edge; third joint only a little longer than wide, obtuse at tip, orbital cilia black and strong above, pale and short on lateral orbit, a few of the lower ones long and yellow.

Thorax green, dorsum somewhat dulled with gray pollen, which leaves the posterior part and a central vitta shining; pleurae more blackish, dulled with gray pollen. Abdomen dark green. Hypopygium black; its lamellae of moderate size, somewhat ovate, whitish with a black border, jagged and bristly on apical margin, fringed above with black hairs.

Fore coxae wholly yellow with silvery white pollen, front surface with little black hairs, except on the upper outer part where the hairs are very minute and white. Middle and hind coxae black, their tips and the trochanters yellow. Fore and middle femora yellow, the latter with a black or brown streak below. Hind femora black with their extreme tips yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Tibiae yellow; posterior pair with their tips blackened; the glabrous stripe on upper surface wide, extending upon the inner side, not quite reaching the base, but reaching the tip as a yellow streak across the black; it is divided by the inner row of large bristles which is continued to the tip by little black hairs. Fore tarsi a little longer than their tibiae, yellow, infuscated at tip. Middle tarsi (fig. 66*a*) one and a fourth times as long as their tibiae; first three joints slender, yellow, fourth and fifth joints black, compressed, densely fringed with black hairs above; fourth joint about as long as third, fifth about half as long, somewhat orbicular in outline but nearly straight below. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 66) grayish; costa not enlarged at tip of first vein; last section of fourth vein a little bent beyond its basal third; anal angle very prominent; hind margin of wing scarcely indented at tip of fifth vein, but with a sinus from this point to the anal angle.

Female.—Face wide as the front, silvery white; third antennal joint about as long as wide, otherwise the antennae are about as in the male; legs and feet as in the male except that the middle tarsi are plain and only a little longer than their tibiae; hind margin of wing without a sinus and the anal angle not quite so prominent as in the male. The fore coxae are wholly yellow; middle tibiae with one bristle below, their basitarsi without a bristle above.

Redescribed from 1 male and 3 females taken by J. M. Aldrich; 1 pair at Craig's Mountain, Idaho; 2 females at Emigration Canyon, Utah, 1 on July 8, 1911, the other on July 21, 1917, at 7,000 feet elevation.

The type specimen in the United States National Museum, No. 5236, is from Popof Island, Alaska, taken July 8, 1899; it is in poor condition; it appears to be a male, but I could not see the hypopygium and the middle tarsi are broken off; with this stands a female from the same place, taken July 10, and also a specimen taken on the top of the Las Vegas Range, New Mexico, June 28 (T. D. A. Cockerell).

No. 67. DOLICHOPUS FLAVILACERTUS, new species.

Male.—Length 4–4.5 mm.; of wing 3.5–3.75 mm. Face very narrow, golden yellow, more silvery near the proboscis, front dark green. First antennal joint wholly yellow, second and third joints black (fig. 67*a*), third nearly orbicular in outline but slightly pointed at tip. Orbital cilia wholly black.

Thorax green with more or less distinct coppery reflections, which sometimes form stripes along the rows of acrostichal bristles; pleurae dulled with gray pollen. Abdomen dark green with large spots of white pollen on the sides of the segments and narrow black incisures. Hypopygium black; its lamellae of moderate size, somewhat oval in outline but narrowed into the stem and quite pointed at tip, whitish or yellowish with a narrow brown border and fringed with brown hairs; the hook-shaped inner appendages are prominent, yellow, and nearly as long as the lamellae.

Fore coxae yellow in front for more than half their length, black at base, the front surface with black hairs, but with these are many delicate yellow ones. Middle and hind coxae black with yellow tips. Fore and middle femora yellow, the latter with a black line at base below, and a small black spot above. Hind femora black with extreme tips yellow, ciliated on lower inner edge with black hairs, which are about half as long as the width of the femora. Middle and hind femora each with one preapical bristle. Fore and middle tibiae yellow; hind tibiae black, thickened, with an elongated spot of yellowish pollen on inner surface. Fore tarsi yellow at base, blackened from the tip of the second joint, about one and a fourth times as long as their tibiae, first joint as long as the remaining four taken together, third about three-fourths as long as second, last three joints a very little flattened. Middle tarsi about the length of their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 76) gray, brownish in front of the third vein; costa a little enlarged at tip of first vein, gradully tapering toward the tip; last section of fourth vein only a little bent just before its middle; third vein bent backward before the tip so that the tips of third and fourth veins are rather close together; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent; wings of rather equal width.

Female.—Face not very wide for a female, white; fore tarsi plain, black from the tip of the second joint; sometimes only the last two joints are black; hind tibiae thick for a female, black, with one bristle below, their basitarsi without a bristle above; anal angle of wing not as prominent as in the male.

Described from 6 specimens. One pair taken at Beltsville, Maryland, June 9, 1915, by W. L. McAtee; 1 male from the same location taken by N. Banks; 1 male taken at Fall River, Massachusetts, June 8, 1909, by N. S. Easton; 1 male at Aeto, New Jersey, June 15, 1893; 1 male at Barcroft, Virginia, June 7, 1912; and 1 female taken by me at Kearney, Ontario, July 9, 1909.

Type.—Male, Cat. No. 23012, U.S.N.M., from Beltsville, Maryland.

No. 68. DOLICHOPUS RUPESTRIS Haliday.

Dolichopus rupestris HALIDAY, Ent. Mag., vol. 1, 1833, p. 164.—SCHINER, Fauna Austr., vol. 1, 1862, p. 222.

Dolichopus festinans ZETTERSTEDT, Insecta Lapp., 1840, p. 708.—COQUILLETT, Proc. Wash. Acad. Sci., vol. 2, p. 424.

Dolichopus fuscimanus ZETTERSTEDT, Dipt. Scand., vol. 2, 1843, pp. 507, 510.

Male.—Length, 5 mm.; of wing, the same. Face wide, a little wider at widest point than the width of the third antennal joint; yellowish brown, more whitish on the lower portion. Front bronze brown, shining. Antennae wholly black; third joint a little longer than wide, ovate, still a little pointed at tip. Palpi brownish. Orbital cilia wholly black.

Thorax bronze brown, dulled with rather thick brown pollen; pleurae more blackish, dulled with gray pollen. Abdomen dark green, the last two segments more bronze brown; the white pollen of its sides extends over the dorsum and leaves a median line and the hind margins of the segments blackish. Hypopygium black; its lamellae of moderate size, somewhat quadrilateral in outline, more or less brownish with a black border, jagged and bristly on apical margin, otherwise fringed with black hairs.

Fore coxae black, sometimes more or less reddish, as if immature, clothed on the anterior surface with little black hairs; middle and hind coxae almost wholly black, femora yellow. Middle and hind femora each with one preapical bristle; posterior pair with a black or brown spot on upper surface at tip, nearly bare below; tibiae yellow; hind tibiae a little swollen on inner side at basal third and at tip, black at tip for one-sixth their length; the glabrous stripe on upper surface wide and distinct, reaching their entire length and extending on to the inner side on the swollen portion; sometimes this swollen portion has a reddish brown streak. Fore and middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, first joint of the former as long as the three succeeding joints taken together, second joint a little longer than the third, fourth and fifth joints of nearly equal length. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 68) dark grayish; costa with a knotlike enlargement at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing not indented at tip of fifth vein; tips of third and fourth veins widely separated; anal angle of wing rather prominent.

Female.—Face wider and more yellowish or whitish than in the male; hind tibiae not swollen on inner side; costa without an enlargement; color of the thorax more greenish; otherwise about as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above, but with a rather large bristle below near the middle and several small ones; the male also has these bristles on the lower surface of the middle basitarsi, the largest of these is larger than is found on the lower surface of most, if not any other, of our species.

Redescribed from several males and females in the United States National Museum; they were taken on Popoff Island, Alaska, July 8, and St. Paul Island, Alaska, August 11, by T. Kincaid; and 2 pairs taken by J. S. Hine, at Katmai, Alaska, August.

Location of type unknown. It is European.

No. 69. DOLICHOPUS FUCATUS, new species.

Male.—Length, 5 mm.; of wing, 4 mm. Face of moderate width, silvery white. Front shining green with coppery reflections in the center. Antennae wholly black; third joint about as long as wide, somewhat orbicular in outline, but slightly pointed at tip. Lateral and inferior orbital cilia yellowish, a few of the upper ones black.

Thorax shining green with slight coppery reflections, which form indications of two vittae on the anterior edge of the dorsum; pleurae dulled with white pollen. Abdomen shining green with black incisures and coppery reflections; the white pollen on the sides not very abundant. Hypopygium black; its lamellae (fig. 69*a*) rather large, somewhat triangular in outline, but a little rounded at apex, white with a narrow black border, jagged and bristly at lower corner; otherwise fringed with black hairs.

Coxae black; anterior pair yellow at tip for about half their length on the front side; middle and hind pairs narrowly yellow at tip. Femora yellow. Middle and hind femora each with one preapical bristle, the latter black at tip as far as the preapical bristle, without cilia below. Tibiae yellow; posterior pair black at tip for one-fifth their length, the glabrous stripe on upper surface distinct, occupying the space between the rows of large bristles, which are rather widely separated; fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint, the former with the first joint nearly as long as the remaining four joints taken together; second joint slightly longer than the third; third and fifth of nearly equal length; fourth slightly shorter. Hind tarsi wholly black. Middle tibia with one bristle below, its basitarsus without a bristle above. Calypters and halteres yellow, the former with yellow cilia; still some of these cilia appear brown or blackish in certain lights.

Wings (fig. 69) grayish, strongly tinged with brown in front of second vein; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent at its middle; hind margin of wing slightly indented at tip of fifth vein; anal angle not at all prominent, the wing being narrowed at base.

Described from 1 male taken on Mount Constitution, Orcas Island, Washington, July 7, 1905, by J. M. Aldrich.

Type.—Male, Cat. No. 23013, U.S.N.M.

No. 70. DOLICHOPUS APHELES Melander and Brues.

Dolichopus apheles Melander and Brues, Biol. Bull., vol. 1, 1900, p. 144, fig. 3.

Male.—Length 4–5 mm.; of wing 4 mm. Face wide, yellowish gray or almost whitish. Front blue green, a little dulled with gray pollen. Antennae black; lower edge of first joint more or less reddish; third joint about as long as wide, subtriangular, a little pointed at tip. Palpi dark yellow. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax green, more shining and bluish posteriorly, the anterior half of the dorsum dulled with brownish pollen; pleurae dulled with white pollen. Abdomen green with black incisures, hind margins of segments coppery; the white pollen of its sides abundant and extending over the dorsum. Hypopygium black; its lamellae (fig. 70*a*) rather small, only a little longer than wide, oval but narrowing into the stem, whitish with a narrow black border on apical and upper margins, jagged and bristled at apex, fringed above with delicate, rather long, dark hairs.

Fore coxae yellow, with a round black spot at base on outer surface, front side with white pollen and conspicuous black hairs. Middle and hind coxae black with yellow tips. Femora yellow; middle and hind femora each with one preapical bristle, the latter black at tip on upper edge as far as the preapical bristle, without cilia below. Tibiae yellow; posterior pair scarcely thicker than the others, black at tip for one-fifth their length. Middle tibiae with one bristle below, their basitarsi without a bristle above. Fore and middle tarsi a little longer than their tibiae, black from the tip, sometimes from the middle of the first joint, the front ones with the first joint as long as the three following joints taken together, fourth and fifth of equal length, third a little longer than fourth. Hind tarsi wholly black, scarcely one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 70) grayish, tinged with brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein a little bent beyond its basal third, but before its middle; hind margin of wing not indented at tip of fifth vein; anal angle rounded, not very prominent.

Redescribed from the type specimen in the American Museum of Natural History in New York City, which was taken at Milwaukee, Wisconsin; and 1 male taken at Battle Creek, Michigan, by J. M. Aldrich.

No. 71. DOLICHOPUS AFFLUENS, new species.

Male.—Length 4.2–5 mm.; of wing 4 mm. Face of moderate width, silvery white. Front dark shining green. Antennae wholly black; third joint about as long as wide, slightly pointed at tip.

Lateral and inferior orbital cilia whitish, about eight of the upper cilia on each side black.

Thorax green with more or less coppery reflections; dorsum with a very little brown pollen which can be seen only when it is viewed obliquely; pleurae dulled with white pollen. Abdomen shining green with coppery reflections, which are more conspicuous on the hind margins of the segments; the white pollen on its sides rather abundant. Hypopygium black; its lamellae (fig. 71*a*) rather large, somewhat triangular but rounded on upper corner, nearly as wide as long, white, with a narrow black border on the apical margin, which is jagged and bristly.

Coxae black with yellow tips; anterior pair with the yellow extending to the middle on the front surface, which is covered with silvery white pollen and little black hairs; the hairs on the outer edge of the front side are minute and white. Femora yellow; anterior pair brown on the upper surface. Middle and hind femora each with one preapical bristle, the latter black at tip as far as the preapical bristle, without cilia below; the little hairs on both inner and outer surface wholly black. Tibiae yellow; posterior pair a little thickened, black for about one-fourth their length, the glabrous stripe between the rows of bristles on upper surface broad. Fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint, the former with the first joint nearly as long as the remaining four joints taken together, third and fifth joints of equal length, fourth slightly shorter. Hind tarsi wholly black, about one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 71) grayish, tinged with brown in front from the tip of the first vein back as far as the third vein; costa scarcely thickened at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing slightly indented at tip of fifth vein, rather evenly rounded, the anal angle not being much developed.

Female.—Differs from the male in having the face wide, white but not silvery; the fore femora are brown above as in the male, the middle tibiae have one bristle below, their basitarsi are without a bristle above.

Described from 8 males and 1 female, taken on Mount Constitution, Orcas Island, Washington, July 7, 1905, by J. M. Aldrich.

Type.—Male, Cat. No. 23014, U.S.N.M.

This species differs from *apheles* Melander and Brues in having the face narrow and silvery (it is wide and yellowish gray in *apheles*) and in having the hypopygial lamellae larger and the fore femora brown above. From *discolor*, new species, it differs in having the fore coxae largely black and the fore femora brown above, in *discolor* the fore coxae are mostly yellow and the fore femora not at all darkened above. From *fucatus*, new species, it differs in having black cilia on the calypters and the brown on upper edge of fore femora, *fucatus* has yellow cilia and the fore femora wholly yellow. It differs from *sincerus* Melander and *subdirectus*, new variety, in having the wings brownish in front of third vein, front green and the tips of hind tibiae sharply black; in these other two forms the wings are almost hyaline, front violet and the hind tibiae yellowish on inner side almost to the tip, more black on the outer side, but the black shading into the yellow.

No. 72. DOLICHOPUS DISCOLOR, new species.

Male.—Length 4.5–5 mm.; of wing 4–4.2 mm. Face rather wide, silvery white. Front shining green with more or less violet reflections. Antennae black; first joint yellow below; third joint but little longer than wide, somewhat conical in outline. Palpi yellow. Lateral and inferior orbital cilia yellowish, a few of the upper cilia black.

Thorax green, dorsum with grayish brown pollen, which leaves the posterior part and a median vitta shining, often with bronze or blue reflections; pleurae dulled with white pollen. Abdomen green with black incisures and coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 72*a*) of moderate size, short oval, or somewhat quadrate in outline, being cut off rather abruptly at apex and the upper angle at base rising abruptly from the stem, white with rather broad black border on apical and upper margins, jagged and bristly at apex, fringed above with rather long brown hairs.

Fore coxae yellow, infuscated at base, sometimes the outer side is black for half their length, sometimes it has only a black spot at base, anterior surface with conspicuous black hairs. Middle and hind coxae black with yellow tips. Femora yellow; middle and hind ones each with one preapical bristle, the latter black at tip on upper edge as far as the preapical bristle, the lower inner edge has a row of minute yellow hairs, not ciliated. Tibiae yellow, posterior pair scarcely thickened, black at tip for about one-fifth their length, the glabrous stripe on upper surface distinct. Fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint, the former with the first joint as long as the three following joints taken together, fourth and fifth of equal length, Hind tarsi wholly black, one and a third times as long as their tibiae. Calpyters and halteres yellow, the former with black cilia.

Wings (fig. 72) grayish, strongly tinged with brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein bent just beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein; rather evenly rounded; anal angle moderately prominent, but rounded.

Female.—Face wide, covered with white pollen; thorax and front femora more blue than in the male; fore coxae, hind femora, and hind tibiae about as in the male; fore and middle tarsi slightly shorter than in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from many males and females which were taken as follows: At Algonquin, Illinois, June 4 (Nason); by me at Lewiston, New York, May 30; Erie County, New York, May 30 to August 4; Tonawanda, New York, August 4; Fort Erie, Ontario, June 20; Toronto, Ontario, August 12; also 1 female, Turtle Mountains, near Bottineau, North Dakota, June 21. (Aldrich.)

This species differs from *sincerus* Melander by having the fore coxae mostly yellow, only infuscated at base, in *sincerus* they are almost wholly black with the tip narrowly yellow; the hypopygial lamellae are larger and wider at base here, the fore part of the wing brownish and the face silvery white.

Type.—Male, Cat. No. 23015, U.S.N.M., from Erie County, New York.

No. 73. DOLICHOPUS SINCERUS Melander.

Dolichopus sincerus MELANDER, Canadian Ent., vol. 32, 1900, p. 136, figs.

Male.—Length 3.75–4.5 mm.; of wing 3–4 mm. Face rather wide, silvery white, sometimes quite yellowish on upper three-fourths. Front dark shining green, sometimes violet (Melander says "brassy-green"). Antennae wholly black; third joint a little longer than wide, somewhat oval in outline but rather pointed at tip. Palpi dark yellow with white pollen. Lateral and inferior orbital cilia yellowish, the black cilia descending about one-fourth the eye height.

Thorax dark shining green (Melander states "brassy-green, more cupreous along the sides and with two cupreous stripes in front"); pleurae dulled a little with grayish pollen. Abdomen green with black incisures, which are bordered with cupreous; the white pollen on its sides abundant, extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, white with a broad black border on apical margin, which is jagged and bristly.

Coxae black with narrow yellow tips; anterior pair with white pollen and little black hairs on the front surface; the middle coxae usually have a few white hairs mixed with the black ones. Femora yellow. Middle and hind femora each with one preapical bristle, the latter black at tip, except below, as far as the preapical bristle; in the type specimen the black hairs on inner surface descend to the lower edge, not even leaving the usual glabrous stripe on lower edge, but in my specimens there is a row of minute yellow hairs on lower inner edge. Tibiae yellow; posterior pair black at tip for about one-sixth their length; still the inner side is yellow almost to their tips; they are only a little thicker than the others. Fore tarsi about equal to their tibiae in length; infuscated from the tip of the first joint, which is about as long as the remaining four taken together; last three joints of about equal length. Middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 73) grayish; costa a little enlarged at tip of first vein, gradually tapering to its tip; last section of fourth vein a little bent just before its middle; last section of fifth vein nearly three times as long as the cross vein; hind margin of wing scarcely indented at tip of fifth vein; anal angle of wing not very prominent, rounded.

Female.—Face wide, covered with whitish pollen; wings and feet about as in the male; the middle tibiae have three large bristles on lower anterior edge, their basitarsi without a bristle above.

Redescribed from a type specimen and 2 males which I took, one at Emsdale, Ontario, July 30, and the other at Scotia Junction, Ontario, July 31; 3 males and 3 females from the White Mountain region of New Hampshire, in the collection of J. M. Aldrich.

The type specimen, in the American Museum, was taken by Doctor Wheeler, in Price County, Wisconsin, Aug. 19, 1897.

Four females which I took at East Aurora, New York, June 15, seem to belong here, but they have tips of the hind tibiae black for one-fourth their length; a male taken by J. M. Aldrich at Olympia, Washington, I can not separate from the others.

No. 74. DOLICHOPUS SINCERUS, var. SUBDIRECTUS, new variety.

Male and female.—This form is so nearly like *sincerus* Melander that it would answer that description very well; it differs, however, in having the fore coxae more yellow at tips; costa scarcely at all enlarged at tip of first vein (in *sincerus* it is only a little thickened); the notch at tip of fifth vein is a little deeper; and the bend in the last section of fourth vein is very small and perhaps more exactly in its middle (fig. 74).

The nearly straight fourth vein is the only character which could be depended on to separate the two forms as far as I can see.

Described from 1 male and 2 females taken at Franconia, New Hampshire; 1 female taken at Woods Hole, Massachusetts; and 1 female from Monmouth, Maine, July 14, by C. A. Frost.

Holotype and allotype in the National Museum, taken at Woods Hole, Massachusetts.

Type.—Male, Cat. No. 23554, U.S.N.M.

No. 75. DOLICHOPUS GENUALIS, new species.

Male.—Length 4 mm.; of wing 3.7 mm. Face of moderate width, silvery white. Front shining green with bronze reflections. Antennae wholly black; third joint nearly twice as long as wide, obtuse at tip, arista inserted a little before the tip on the upper edge. Lower orbital cilia whitish, the upper cilia black.

Thorax green with slight bronze reflections; pleurae dulled with white pollen. Abdomen green with coppery reflections; the usual white pollen on its sides rather thin, but covering most of the sides of the segments. Hypopygium black; its lamellae (fig. 75*a*) of moderate size, triangular in outline, with the apical edge cut off obliquely so as to make the upper edge less than half as long as the lower and the lower point very acute; they are white with a very narrow black border on apical edge and with the acute point black; apparently not jagged but fringed on the apical margin with brown hairs.

Fore coxae yellow with a large black spot on the outer side at base, their anterior surface covered with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter black at tip, not ciliate below, the little black hairs on the outer side descending to the lower edge; but on the inner surface, however, there are a few delicate yellow hairs on the lower portion. Posterior tibiae black at tip for nearly one-fourth their length, only a little thickened. Fore tarsi a little longer than their tibiae, yellow, with the last two and a half joints black, first joint nearly as long as the remaining four taken together, fifth about as long as third and slightly compressed, fourth a little shorter than fifth. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 75) grayish; costa not enlarged at tip of first vein; last section of fourth vein bent before its middle; third vein distinctly bent backward so as to approach the fourth at their tips; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle not being very prominent.

Female.—Face wide, white; third antennal joint small, about as long as wide, the arista inserted just above the pointed tip; femora, tibiae, and wings about as in the male. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Described from 1 male and 3 females. The male was taken at Moosehead, Maine, July 18; 1 female at Machias, Maine, July 20; 1 female at Fogo Island, Newfoundland, July 29, and the other female at Grand Lake, Newfoundland, July 25, 1906; and one female taken at Waubamic, Ontario, June 14, by H. S. Parish, and in the collection of A. L. Melander.

Type and allotype.—In the collection of the Boston Society of Natural History; the former was taken at Moosehead, Maine, and the latter at Fogo Island, Newfoundland.

The female from Machias, Maine, has on the fore coxae many little white hairs and the fore tarsi are black from the tip of the first joint; it is possible that it represents another species, but I think not.

No. 76. DOLICHOPUS PRAEUSTUS Loew.

Dolichopus praeustus Loew, Mon. N. Amer. Diptera, pt. 2, 1864, p. 68.

Male.—Length, 5 mm.; of wing, 5.5 mm. Face rather wide, yellowish gray; front green, a little dulled with yellowish gray pollen. Antennae wholly black; third joint somewhat conical in outline, about as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish, about five of the upper cilia on each side black.

Thorax green with bronze reflections, which form a median vitta on the dorsum; dorsum dulled with yellowish-gray pollen, which is more abundant along the front; pleurae a little dulled with white pollen. Abdomen green with bronze reflections, in one specimen also with blue reflections; the white pollen on its sides forming large spots. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, not much rounded at apex; whitish with a rather narrow black border on apical margin, jagged and bristly at lower corner, otherwise the apical edge is fringed with delicate blackish hair; lower edge with a few delicate yellow hairs.

Fore coxae yellowish brown, more yellow at apex and along inner side (they have the appearance of not being fully colored), covered on their anterior surface with little yellowish brown hairs, which appear more black in certain lights. Middle and hind coxae black with their extreme tips yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with a large black spot above at tip, not ciliated but with a row of delicate little yellow hairs on lower inner edge.

Posterior tibiae only a little thickened, blackened at tip for about one-fourth their length, sometimes the black extends further toward the base on inner side; the glabrous stripe on upper surface broken up by the irregular bristles. Middle tibiae with one bristle below. Fore tarsi nearly one and a fourth times as long as their tibiae, infuscated from the tip of the first joint; first joint about as long as the three following joints taken together, fifth joint slightly longer than the fourth. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, their basitarsi without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings rather long and of somewhat equal width; grayish, tinged slightly with yellow in front of third vein; costa scarcely thicker at tip of first vein; last section of fourth vein scarcely bent, still with the suggestion of a bend before its middle, nearly parallel with third vein; hind margin of wing a little indented at tip of fifth vein, beyond which there is a small but distinct flattened lobe; anal angle rather prominent. Wing with a prominent blackish spot at tip, starting at tip of second vein, and extending back of fourth vein.

Redescribed from 2 male type specimens from Illinois.

Types.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 77. DOLICHOPUS OBSOLETUS, new species.

Male.—Length, 4.5 mm.; of wing, 3.5 mm. Face moderately wide and long, silvery white. Front shining blue green. Antennae black; first joint scarcely paler below; third joint rather large, short conical, about as long as wide, a little pointed at tip; proboscis and palpi black. Lateral and inferior orbital cilia whitish, the black cilia descend a little below the upper corner of the eye.

Thorax dark but shining green; pleurae dulled with white pollen. Abdomen dark green, shining, its incisures narrowly black; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat oval in outline, but tapering into the stem, only a little longer than wide, white with black border, jagged and bristly on apical margin, fringed with dark hairs above.

Fore coxae yellow, blackened a little at base, anterior surface with two rows of minute black hairs along inner edge, otherwise with pale hairs, covered with white pollen. Middle and hind coxae black with yellow tips. Femora and tibae yellow. Middle and hind femora each with one preapical bristle, the latter blackened above at tip as far as the preapical bristle, ciliated on the central half of lower edge with about ten yellow hairs which are longer than the width of the femora. Posterior tibiae a little thickened, black at tip for nearly one-third their length, brownish and glabrous for two-thirds their length on inner surface, sometimes the brown extends nearly to the base. Fore tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, which is as long as the three following joints taken together. Middle tarsi black from the tip of the first joint, which is sometimes darkened almost to its base; it is without a bristle above. Hind tarsi wholly black. Middle tibiae with one bristle below. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 77) grayish, scarcely darker in front of third vein; costa with a very small knot-like enlargement at tip of first vein; last section of fourth vein bent a little before its middle; hind margin of wing slightly indented at tip of fifth vein, evenly rounded, the anal angle not being developed.

Described from 1 male taken at Franconia, New Hampshire, by Mrs. Slosson; and 1 male from Moosehead, Maine, July 18, taken by C. W. Johnson.

Type.—Male, Cat. No. 23016, U.S.N.M., from Franconia, New Hampshire.

No. 78. DOLICHOPUS TRISETOSUS, new species.

Male.—Length 4 mm.; of wing 3.5–4 mm. Face rather wide, yellowish. Front green or blue with violet reflections. Antennae (fig. 78*a*) black; first joint yellow below; third joint a little longer than wide, somewhat oval, but a little pointed at tip. Palpi yellow. Lateral and inferior orbital cilia yellowish white, about eight of the upper cilia on each side black.

Thorax green with blue or bronze reflections; dorsum with rather abundant brownish pollen, which is more gray along the front edge; pleurae dulled with white pollen. Abdomen green with black incisures and sometimes with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat oval in outline, about one and a half times as long as wide, white with rather wide black border on upper and apical margins, jagged and bristly at apex, fringed above with rather long stout hairs and a little notched or jagged.

Fore coxae yellow with a black spot on outer surface at base, their anterior surface with white pollen and minute black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with a longitudinal row of three (sometimes only two) large bristles near the tip, the latter black at tip, except below, ciliated on lower inner edge of apical half or more with rather stout hairs, which are about three-fourths as long as the width of the femora; these hairs are usually deep black, but are sometimes reddish or yellow in certain lights. Posterior tibiae a little thickened, black at tip for one-fifth their length, the glabrous stripe on upper surface between the large bristles distinct; there is another glabrous stripe on inner surface which is wide near the base and becoming narrow at the tip of the tibiae; it is separated from the upper stripe by the inner row of bristles and a few small hairs between these bristles. Fore and middle tarsi a little longer than their tibiae, black from the tip of the first joint, the former with the first joint nearly as long as the three following taken together, fourth and fifth of nearly equal length, third only a little longer than fourth. Hind tarsi one and a third times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 78) grayish; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing not indented at tip of fifth vein; wing of somewhat equal width; anal angle prominent and with indications of a flattened lobe at tip of sixth vein.

Female.—Face wide, white, a little tinged with yellow; middle and hind femora each with two, sometimes three bristles before their tips, the latter without cilia below, tarsi about as in the male; middle tibiae with one bristle below, their basitarsi without a bristle above; hind margin of wing rather evenly rounded, a little indented at tip of fifth vein; anal angle prominent, but without any indication of a lobe.

Described from 1 male and 9 females taken at Beverly, Massachusetts, June 4, 1869 (Riley, National Museum); 1 male, which I took at Colden, New York, May 31, 1914; 1 male taken at Sherborn, Massachusetts, May 30; and 1 male from New Brunswick, taken June 21, 1914, by J. D. Tothill.

Type.—Male, Cat. No. 23017, U.S.N.M., from Beverly, Massachusetts.

No. 79. DOLICHOPUS COMATUS Loew.

Dolichopus comatus LOEW, Neue Beitr., vol. 8, 1861, p. 23; Mon. N. Amer. Diptera, pt. 2, 1864, p. 69.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 14, pl. 2, fig. 25.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 2.5–4.2 mm.; of wing 2.5–4 mm. Face rather narrow, silver white. Front green, dulled with white pollen, especially along the orbits. Antennae wholly black; third joint one and a half times as long as wide, oval, rounded at tip. Lateral and inferior orbital cilia white, the lower ones flattened, about eight of the upper cilia on each side black. Proboscis and palpi blackish.

Thorax green with green reflections, which usually form a median vitta on the dorsum with a shining green or blue line on each side of it; dorsum a little dulled with almost invisible brownish pollen; pleurae dulled with white pollen. Abdomen green with narrow black incisures and coppery reflections; the white pollen on its sides extending upon the dorsum. Hypopygium black; its lamellae rather small, oval, a little longer than wide, white, with a narrow brown border on apical margin, fringed with delicate pale hairs, a few of those at apex brown.

Fore coxae yellow with a small blackish spot at base on outer side, anterior surface covered with silvery pollen and with little black hairs on inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with a row of delicate little yellow hairs on lower inner edge, and with a more or less conspicuous black spot at tip on upper edge. Posterior tibiae not thickened, black at tip for nearly one sixth their length. Middle tibiae (fig. 79) with a row of four long bristles on upper surface the longest of which is nearly three-fourths as long as the tibiae. Fore tarsi about one and a half times as long as their tibiae; first joint pale yellow, brown at extreme tip, slightly longer than the remaining four joints taken together, last four joints deep black, a little compressed, second and third of nearly equal length, fourth about as wide as long, fifth about as long as fourth but not as wide. Middle tarsi nearly one and three-fourths as long as their tibiae, black from the tip of the first joint, which has a row of eight or ten long, slender bristles on upper posterior edge, these are of decreasing length, the first being about half as long as the joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 79*a*) grayish; costa not enlarged at tip of first vein; last section of fourth vein a little bent near its middle; hind margin of wing scarcely indented at tip of fifth vein; nearly evenly rounded, the anal angle being rounded off.

Female.—Face wide, white; third antennal joint small, not longer than wide; front without white pollen; lower orbital cilia not at all flattened, not as white as in the male; palpi yellow; Fore coxae with the little black hairs extending over most of their anterior surface; middle tibiae with the bristles normal, their basitarsi without any bristle above; middle and hind tarsi one and a fourth times as long as their tibiae, blackened from the tip of the first joint, the former with the basitarsi about as long as the remaining four joints taken together, fifth joint slightly longer than fourth; bend in the last section of fourth vein slightly nearer the cross-vein than in the male.

Redescribed from numerous males and females from the following localities: Montgomery County, Pennsylvania, May 20 to July 24; Washington, District of Columbia, May 5; New Bedford and Woods Hole, Massachusetts; Lafayette, Indiana, May 4 to October 1; Michigan City, Indiana, August 18; Shelby, Indiana, May 24; Opelousas, Louisiana, March; New Jersey, several places, May to July; Western New York, May 26 to November 12; Cranmoor, Wisconsin, June 21; Fort Erie, Ontario, May 30; Black Creek, Ontario, July 24; Toronto, Ontario, July and August; Kearney, Ontario, July 26. College Station, Texas, March 16, 1908.

Type localities.—Pennsylvania, Maryland, District of Columbia. Aldrich reports it from Pennsylvania and New Jersey. Melander and Brues from Massachusetts, Illinois, and Wisconsin.

Type.—Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 80. DOLICHOPUS VIRGA Coquillett.

Dolichopus virga Coquillett, Canadian Entomologist, vol. 42, 1910, p. 41.

Male.—Length 4.5 mm.; of wing the same. Face rather wide, silvery white. Front dark shining green. Antennae black; first joint very slightly yellowish on lower apical corner; third joint rather large, twice as long as wide, somewhat oval in outline, but obtusely pointed at tip. Lateral and inferior orbital cilia whitish, about six of the upper cilia black.

Thorax green, dorsum dulled with brown pollen and pleurae with white. Abdomen green with slight bronze reflections and black incisures; white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, apical margin straight and with an acute point at lower corner, whitish with a narrow black border on the oblique apical margin, which is fringed with rather long black hairs but not jagged.

Fore coxae yellow with a black spot on outer side at base, anterior surface covered with silvery pollen and little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with a blackish spot at tip on upper surface, nearly bare below. Middle tibiae without a bristle below; posterior tibiae black at tip for one-fifth their length. Fore tarsi (fig. 80*a*) about as long as their tibiae, black from the middle of the third joint; first two joints compressed, very thin but not widened, first as long as the remaining four taken together; last three joints compressed, of nearly equal length, third slightly widened at tip, fourth and fifth more (vertically) widened and fringed on either edge with little black hairs so as to form an oval tip to the tarsi. Middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calpyters and halteres yellow, the former with black cilia.

Wings (fig. 80) grayish, usually slightly darker in front of the third vein; costa not enlarged at tip of first vein; last section of fourth vein only a little bent near its middle; tips of third and fourth veins widely separated; hind margin of wing only slightly indented at tip of fifth vein, evenly rounded; anal angle rather prominent but rounded

Female.—Face wide; third antennal joint smaller than in the male, about one and a half times as long as wide; the black spot at tip of hind femora not as conspicuous; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint. Middle tibiae with one bristle below, their basitarsi without a bristle above.

Redescribed from the type and 1 other male and 1 female in the National Museum collection, all taken at Manahawkin, New Jersey, Sept. 5, 1909, by H. S. Harbeck; 1 male taken at Eastport, Maine, June 30; 6 males and 3 females from Woods Hole, Massachusetts; and 2 males and 2 females from New Bedford, Massachusetts, May 20, 1896 (Hough).

Type.—Male, Cat. No. 12765, U.S.N.M.

No. 81. DOLICHOPUS BARYCNEMUS Coquillett.

Dolichopus barycnemus COQUILLETT, Harriman Alaska Exped., Insects, vol. 9, p. 28, 1904; Proc. Wash. Acad. Sci., vol. 20, 1904, p. 423.

Male.—Length 5.2 mm.; of wing 5 mm. Face wide for a male, yellowish white, purer white below. Front green, not very shining. Antennae black; first joint yellowish on lower edge; third joint only a little longer than wide, oval, rather rounded at tip. Lower orbital cilia yellowish; the black cilia descend nearly to the middle of the eye height.

Thorax green with very slight bronze reflections and abundant gray pollen on the anterior portions of the dorsum; pleurae dulled with gray pollen, more blackish than the dorsum. Abdomen green with very slight bronze reflections and narrow black incisures; the white pollen on its sides abundant. Hypopygium black; its lamellae moderately large, somewhat oval in outline, whitish with a narrow black border above and wider black border at apex, jagged and bristly on apical margin, fringed with black hairs above.

Fore coxae yellow with a small black spot at base on outer side, their anterior surface clothed with minute hairs, which are yellow on outer half and black on inner portion; middle and hind coxae black with yellow tips. Femora yellow; middle and hind femora each with one preapical bristle, the latter black at tip and ciliated below on their apical half, with scattering black hairs, the longest of which are nearly as long as the width of the femora, those near the tip very short; these hairs have a brownish or yellowish color in certain lights, and there are a few very delicate white hairs on the lower edge near the base. Fore and middle tibiae yellow, slightly darker toward their tips. Posterior tibiae black with the knees yellow, thickened, the glabrous stripe on upper surface between the rows of large bristles distinct. Fore tarsi one and a fourth times as long as their tibiae; first three joints yellowish with brown tips, first about one and a half times as long as second; fourth joint a little longer than the fifth, black, slightly compressed, fifth a little more compressed, oval, about twice as long as wide, still not conspicuously enlarged, black; pulvilli white. Middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with strong black cilia.

Wings grayish, strongly tinged with brown in front of third vein and narrowly so along the veins; costa with a small elongated enlargment at tip of first vein; last section of fourth vein moderately bent near its middle; tip of third and fourth veins rather far apart; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent.

Redescribed from the single type specimen in the United States National Museum, which was taken on Popoff Island, Alaska, July 11, 1899, by T. Kincaid.

Type.—Male, Cat. No. 5235, U.S.N.M.

No. 82. DOLICHOPUS PACHYCNEMUS Loew.

Dolichopus pachycnemus Loew, Neue Beitr., vol. 8, 1861, p. 13; Mon. N. Amer. Dipt., pt. 2, 1864, p. 35.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 9, pl. 1, fig. 12. —Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5.5–5.75 mm.; of wing 4.5 mm. Face wide for a male, dark ochre yellow, dulled with pollen. Front usually blue or violet edged with green, sometimes mostly green, shining. Antennae (fig. 82) black; first joint sometimes a little yellowish below; third joint about as long as wide, somewhat oval in outline, rather rounded at apex. Orbital cilia wholly black.

Thorax dark shining green, with a rather broad bronze vitta in the center of the dorsum; pleurae dulled with grayish pollen. Abdomen dark shining green with black incisures and spots of white pollen on the sides of the segments. Hypopygium black; its lamellae (fig. 82*a*) rather large, somewhat orbicular in outline, still with the outer corner nearly a right angle, whitish with wide black border at apex and narrow border above and on apical half of lower edge, jagged and bristly on apical margin, fringed above with rather long black hair.

Coxae black with their tips narrowly yellow; anterior pair covered with black hairs on the front surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with rather long hair above near the base and long black cilia on apical half of lower inner edge, the longest hairs being fully as long as the width of the femora. All tibiae with rather numerous and strong bristles; posterior pair (fig. 82*b*) with their apical half or more black, much thickened, and with a groove on upper surface which reaches from the tip to basal two-fifths, it is forked near the middle of the tibiae and yellowish in color. Fore tarsi (fig. 82*c*) a little longer than their tibiae, first three joints yellow, usually with their tips brown, third a little compressed and widened at apex; fourth and fifth joints black, compressed and fringed above with little black hairs, fourth about as wide at apex as it is long, fifth nearly round in outline, last three joints of nearly equal length. Middle tarsi scarcely as long as their tibiae, black from the tip of the first joint, which has a large bristle near apical third above, and several bristles on the side. Hind tarsi wholly black. Calypters and halteres yellow, the former with long black cilia.

Wings uniformly tinged with dark gray; costa not enlarged at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing only a little indented at tip of fifth vein; anal angle of wing rather prominent but rounded.

Female.—Face wide, grayish white; fore tarsi plain, blackish from the tip of the first joint; hind femora without cilia; hind tibiae of normal size, with apical fifth or a little more black, this black not sharply defined; middle tibiae with a pair of bristles at apical third and two others preceding them on the lower surface.

Redescribed from 12 males and 4 females; J. M. Aldrich took 1 male at Erwin, South Dakota, June, 1908, and 3 pairs at Brookings, South Dakota, June 12, 1891. I took 8 males at Chatham, Ontario, June 17, 1915, and 1 male at East Aurora, New York, June 2, 1918.

Type localities.—Middle States; Illinois. Aldrich reports it from South Dakota, and Melander and Brues from Massachusetts. I have seen a female from Outremont, Quebec, June 20.

Type.—Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 83. DOLICHOPUS UNGULATUS Linnaeus.

Musca ungulata Linnaeus, Fauna Suecica, ed. 2, 1761, No. 1858.
Nemotelus aeneus De Geer, Mem. Hist. Nat. Ins., ed. Goetze, 1782, p. 78.
Dolichopus aeneus Van der Wulp, Tidsch. v. Ent., vol. 22, 1869, p. 80.
Dolichopus ungulatus Lundbeck, Dipt. Danica, vol. 4, 1912, p. 146.

Male.—Length 6 mm.; of wing 5 mm. Face rather narrow, grayish, scarcely silvery. Front shining green. Antennae wholly black; third joint about as long as wide, somewhat pointed at tip: Orbital cilia wholly black.

Thorax green with a little white pollen on the anterior part of the dorsum; pleurae dulled with white pollen; scutellum with a fringe of little pale hairs on the lower edge of the hind margin. Abdomen green with coppery reflections toward the tip and narrow black incisures, and with conspicuous spots of white pollen on the sides of the segments. Hypopygium black, rather long; its lamellae (fig. 83*a*) large, somewhat oval in outline but nearly straight below, whitish with broad black border on apical margin and narrowly black along the upper edge, jagged and bristled at lower apical corner, otherwise fringed with delicate little brown hairs.

Fore coxae black at base, apical half or more yellow, their anterior surface covered with conspicuous black hairs; middle and hind coxae black with extreme tips yellow. Femora and tibiae yellow. All femora with long black cilia on apical half below, the longest hairs on fore femora as long as the width of the femora, those on middle and hind pairs longer than their width. Middle and hind femora each with a longitudinal row of from three to five long bristles near the tip, the latter also with a row of long hairs above near the base. Tibiae with long stout bristles; posterior pair black at tip for nearly one-fourth their length; they have a glabrous stripe on inner surface of basal half. Fore and middle tarsi a little longer than their tibiae, the former yellowish becoming brown toward their tips, the latter black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with long black cilia.

Wings (fig. 83) grayish; costa with an elongated enlargement at tip of first vein; last section of fourth vein bent at its middle; hind margin of wing indented at tip of fifth vein, and with just a suggestion of a lobe at tip of sixth vein caused by the anal angle narrowing toward the root of the wing.

Female.—Face broad, its pollen more silvery white, the cilia on the lower edge of the femora represented by short black hairs; middle tibiae with one or two bristles below and a row of five on the lower front edge; hind margin of wing more evenly rounded, the anal angle not being cut off obliquely as in the male. Middle basitarsi with a large bristle above.

Redescribed from 2 males and 2 females from Europe (Aldrich). Van der Wulp reports it from Wisconsin.

No. 84. DOLICHOPUS BARBIPES, new species.

Male.—Length 4–4.3 mm.; of wing 3.5 mm. Face rather wide, long, silvery white. Palpi unusually long, white, reaching beyond the brown proboscis, Front shining green. Antennae wholly black; first joint long, not widened at tip; as long as second and third taken together; third joint longer than wide, somewhat oval in outline. Orbital cilia wholly black. Proboscis black, palpi large, oval, snow-white.

Thorax shining green with bronze reflections, which color sometimes forms two lines, one each side of the acrostichal bristles, and with a very little white pollen on the front dorsum; pleurae usually with blue reflection, a little dulled with gray pollen. Abdomen green with coppery reflections, the apical segments mostly coppery; there are usually some blue reflections on the sides near the base. Hypopygium black; its lamellae large, somewhat oval, whitish, with a narrow black border on apical margin, which is jagged and bristly, fringed with delicate hairs on upper and lower edges.

Fore coxae wholly yellow, their anterior surface covered with silvery pollen, bare, except for the usual bristles at tip. Middle and hind coxae black with yellow tips. Femora and tibiae yellow.

Middle and hind femora each with one preapical bristle, the latter nearly bare below. Anterior tibiae (fig. 84) fringed for their entire length on upper edge with very long black hairs which are as long as the basitarsi; outside of these hairs is a bare stripe the whole length of the tibiae; below at basal third there is a delicate black bristle. Middle tibiae with a row of about nine bristles on the lower edge of the apical half; posterior pair narrowly black at tip, not thickened. Fore and middle tarsi yellowish brown at base, becoming black from the tip of the first joint, one and a fourth times as long as their tibiae, the former with fourth and fifth joints of equal length. Hind tarsi wholly black, their basitarsi with one large bristle above. Calypters and halteres yellow, the former with pale cilia.

Wings grayish, slightly tinged with brown in front and along the cross vein; costa scarcely enlarged at tip of first vein; last section of fourth vein considerably bent at middle; hind margin of wing a little indented at tip of fifth vein; anal angle rounded so as to make the wing narrow at base.

Female.—Face nearly as wide as the front, silvery white; antennae only a little shorter than those of the male; fore coxae with little black hairs on their anterior surface; tibiae with their bristles and hairs normal, middle pair with two or three bristles below, their basitarsi without a bristle above; hind basitarsi with one bristle above; the cilia of the calypters appear black in some lights and yellowish or whitish in others. I do not see this change of color in any of the males before me. These cilia are rather short and not very abundant in either sex.

Described from 7 males and 3 females taken by J. M. Aldrich, at Wells, Nevada, July 12, 1911.

The name for this species was proposed by Prof. J. M. Aldrich and is very appropriate, the long hairs on the fore tibiae and the bristles on the lower surface on middle tibiae being quite remarkable.

Type.—Male, Cat. No. 23018, U.S.N.M.

No. 85. DOLICHOPUS BREVIPENNIS Meigen.

Dolichopus brevipennis MEIGEN, Syst. Beschr., vol. 4, 1824, p. 89.—LOEW, Mon. N. Amer. Dipt., pt. 2, 1864, p. 37.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 10, pl. 1, fig. 6.—LUNDBECK, Diptera Danica, pt. 4, 1916, p. 144, fig. 45.

Male.—Length 5.5 mm.; of wing 4.5 mm. Face rather wide, ocher yellow, paler below. Front dark shining green. Antennae black; third joint slightly longer than wide, somewhat oval in outline, only a little pointed at tip. Orbital cilia wholly black.

Thorax dark green, with a more or less distinct median bronze vitta on the dorsum; pleurae a little dulled with gray pollen. Abdomen dark green with bronze reflections, which are more distinct on the hind margins of the segments. Hypopygium black; its lamellae rather large, somewhat oval in outline, yellowish with rather broad black border, jagged and bristly at apex; these bristles extend well toward the base on upper edge.

Fore coxae yellow with a black or greenish spot at base on outer side, anterior surface with black hairs. Middle and hind coxae black with their extreme tips yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated below with long yellow hairs, the longest of which are nearly twice as long as the width of the femora. Posterior tibiae only a little thickened and with apical third black. Fore tarsi (fig. 85*a*) about one and a half times as long as their tibiae; the first three joints slender, yellow, fourth black, a little compressed, widened at tip, being nearly as wide at tip as it is long, fifth black, much compressed and widened, oval, about as long as third and two-thirds as wide as long. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, the first joint sometimes blackened almost to the base. Hind tarsi wholly black. Calypters and halteres yellow; the former with black cilia.

Wings (fig. 85) dark grayish; costa with an elongated enlargement at tip of first vein, which is as long as the cross vein; last section of fourth vein bent just before its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent.

Female.—Face wide, gray; third antennal joint scarcely as long as wide; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint, which is a little shorter than the remaining four taken together, third a very little shorter than the second, fifth longer than the fourth; hind femora without cilia below; hind tibiae blackened at tip for one-fourth their length; middle basitarsi with a large bristle above; costa without an enlargement at tip of fifth vein, still it is a little thickened at that point, tapering to its tip.

Redescribed from 3 males from Sweden (Aldrich). Mr. Kennicott took specimens at Fort Resolution, Hudson Bay Territory, which Doctor Loew compared with European specimens and considered the determination correct. The description of the female is from this material, the males seem to have been destroyed.

No. 86. DOLICHOPUS DASYOPS Malloch.

Dolichopus dasyops Malloch, Report Canadian Arctic Expedition, vol. 3, pt. C, 1919, p. 49.

The following is the original description by Mr. Malloch:

Male.—Blue-black, with a distinct cupreous tinge. Antennae and arista black; face black, with dense yellowish brown pile; palpi yellow; proboscis black; postocular cilia entirely black; hairs on eyes yellow. Dorsum of thorax with coppery tinge; fringes of squamae black. Hypopygium black, lamellae white, blackened on apical margins and with black hairs. Legs yellow, fore coxae slightly infuscated at bases, mid and hind pairs black; apices of hind tibiae, apices of basal three, and all of apical-two, joints of fore tarsi, all but base of mid tarsi, and entire hind tarsi fuscous. Wings clear, veins dark brown. Halteres yellow.

Eyes hairy; antennae not elongated, third joint pointed, shorter than high (pl. 8, fig. 8); arista with second joint much elongated, third densely pubescent; face parallel-sided, about one-sixth the head-width at its middle, not descending to lowest level of eyes. Scutellum with two strong bristles and two weak hairs. Hypopygial lamella (fig. 86) as in pl. vii, fig. 9. Fore coxae with short black hairs, and a few bristles near apex; fore tibia with three to four antero-dorsal, two postero-dorsal, and three to four posterior bristles; fourth joint of fore tarsi dilated from base to apex, fifth very much broadened, its width about equal to its length; mid tibia with one ventral, two to three antero-ventral, four to five antero-dorsal, and five to six posterior bristles; mid tarsi simple, with a few short bristles on apical half of basal joint, one of which on dorsal surface is conspicuous; hind femora with inconspicuous black hairs on apical portion of postero-ventral surface; hind tibiae with short regular hairs on basal two-thirds of antero-ventral surface and one long bristle beyond these, antero-and posero-dorsal surfaces each with about eight long bristles; postero-dorsal surface with a slit at apex which runs forward on to dorsum; posterior surface densely black setulose on apical half; basal joint of hind tarsi with about eight bristles in two irregular series. Curve of fourth vein distinct but not abrupt; apices of third and fourth veins subparallel; costa not noticeably swollen at apex of first vein.

Length, 5.25 mm.

Type locality: Bernard Harbour, Dolphin and Union Strait, Northwest Territories, July 10, 1916 (F. Johansen).

This species is most closely allied to *brevipennis* Meigen, but differs in having the hind femora without long pale hairs on ventral surface.

This is a copy of the original description by J. R. Malloch. I have not seen the species.

Type.—In the Canadian National Collection, Ottawa.

No. 87. DOLICHOPUS ORNATIPENNIS, new species.

Male.—Length, 4.5 mm.; of wing the same. Face wide, yellowish gray. Front blue-green, shining. Antennae black; lower edge of first joint narrowly yellowish; third joint about as long as wide, conical in outline, still a little rounded at tip. Orbital cilia wholly black.

Thorax green with coppery reflections; front of the dorsum dulled with gray pollen, pleurae with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 87*a*) of moderate size, somewhat oval, a little longer than wide, pale brownish with a narrow black border on upper, apical, and lower edges, jagged and bristly on apical margin, fringed with black hairs above.

Fore coxae yellow with a conspicuous black spot at base on outer side, their anterior surface covered with black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the little black hairs on their sides descending to the lower edge. Posterior tibiae slightly thickened, narrowly black at tip, and with a brown spot on inner side at basal third. Fore tarsi plain, a little longer than their tibiae, black from the tip of the first joint, which is brownish yellow and as long as the three succeeding joints taken together; fourth and fifth of nearly equal length. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above. Hind tarsi wholly black. Middle tibiae with a pair of bristles below at apical third and one at basal third. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 87) dark grayish, with a large, brown spot, reaching from opposite the cross-vein to the tip of the third vein and from the costa to just back of the third vein, the other veins also bordered with brown; costa with a small enlargement at tip of first vein; last section of fourth vein a little bent before its middle; third vein bent backward at tip, but nearly parallel with fourth; hind margin of wing indented at tip of fifth vein; anal angle rather prominent but rounded.

Described from 2 males from Massachusetts, 1 taken at Sharon, August 9; 1 at Bridgewater, July 11.

Type.—In the Boston Museum of Natural History.

No. 88. DOLICHOPUS DORYCERUS Loew.

Dolichopus dorycerus LOEW, Centuries, vol. 1, 1864, p. 85; Mon. N. Amer. Dipt., pt. 2, 1864, p. 326.

Male.—Length 5.5 mm.; of wing 6.2 mm. Face wide (Loew says that it is more "ochre-brown than ochre-yellow;" my specimen is greasy). Front violet, edged with green. Antennae (fig. 88*a*) with the first joint and more or less of the second yellow, short but normal; third black, second and third taken together somewhat orbicular in outline; arista black, slender, tapering, tipped with a somewhat elliptical, almost fusiform lamella. Orbital cilia wholly black.

Thorax and abdomen green with coppery reflections. Hypopygium black; its lamellae of moderate size, somewhat oval in outline, longer than wide, white with a black border, which is wide on apical, narrow on upper margin, jagged and bristly at apex, fringed above with black hairs, below with a few pale ones.

Fore coxae yellow with a blackish spot at base on outer surface, the anterior side with rather conspicuous black hairs; mixed with these are a few minute yellow ones. Middle and hind coxae black, the former with extreme tips and trochanters yellow, posterior trochanters blackish. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle (Loew states there are usually two preapical bristles on hind femora), the latter not ciliated below. Posterior tibiae scarcely thickened; on their inner surface near basal third is an elongated, brown, slightly swollen spot; extreme tip slightly blackened on inner surface; in my specimen one of the hind tibiae has an additional brownish band near apical third. Fore tarsi (fig. 88*b*) about one and a fourth times as long as their tibiae; first joint yellow with its extreme upper edge and tip black; slightly enlarged at tip, as long as the remaining four joints taken together; last four joints deep black, of nearly equal length, compressed; second joint about as long as wide at apex; third and fourth joints expanded on upper edge into thin lobes which are nearly as wide as the length of the joints and twice as long, fifth joint also expanded into a lobe, but this lobe is whitish except at its base and half as long as the joint; pulvilli small, white. Middle and hind tarsi longer than their tibiae, black from the tip of the first joint; middle basitarsi with a bristle above at apical fourth. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 88) grayish, slightly tinged with yellowish brown on costal edge; costa slightly enlarged at tip of first vein, tapering to their tips; third vein running rather close to the second to a point opposite the tip of second where it bends backward in a curve, so as to approach the costa at an acute angle and running nearly parallel with it for a short distance; last section of fourth vein a little bent at its middle, the outer portion a little arcuate; hind margin of wing scarcely indented at tip of fifth vein, but with a deep sinus before the tip of sixth vein and another beyond it so as to leave a large lobe at tip of sixth vein and the anal angle rounded.

Female.—Face wide, grayish white; third antennal joint nearly orbicular, scarcely pointed, slightly longer than in the male; middle tibiae with two pair of bristles below; fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is as long as the three succeeding joints taken together, fourth and fifth of nearly equal length; third vein separated from second as usual, only a little bent backward at tip; anal angle of wing prominent, beyond this the hind margin is sinuated just enough to suggest the lobe so prominent in the male.

Redescribed from 1 male taken at Bretton Woods, New Hampshire, June 30 and 1 female labeled White Mountains, New Hampshire.

Type locality.—White Mountains, New Hampshire, July 2. In 1908 I took a male at Lancaster, New York, which I sent to C. W. Johnson; he determined it as this species, but we could not find the specimen in his collection when I was there on January 17, 1919. No doubt he was correct in the determination; it is the only time it has been reported, except from the White Mountains, New Hampshire.

No. 89. DOLICHOPUS SOCIUS Loew.

Dolichopus socius LOEW, Cent., vol. 2, 1862, p. 60; Mon. N. Amer. Dipt., pt. 2, 1864, p. 40.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 10.

Male.—Length, 4.2 mm.; of wing, the same. Face rather wide, silvery white, tinged with yellow on upper part. Front shining green. Antennae black; first joint broadly yellow below; third large, somewhat oval in outline, but pointed at tip, nearly twice as long as wide. Lateral and inferior orbital cilia whitish, only a few of the upper cilia black.

Thorax green with bronze reflections, which usually form more or less distinct vittae on the front of the dorsum, where there is also a little white pollen; pleurae dulled with white pollen. Abdomen green with black incisures and bronze reflections; the white pollen on the sides quite distinct. Hypopygium black; its lamellae rather small, somewhat oval in outline, whitish, bordered with black on apical margin, and more narrowly on upper edge, jagged and bristly at apex, fringed with black hairs above.

Fore coxae pale yellow, with silvery pollen and very minute pale hairs on anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with a row of very delicate yellow hairs on lower inner edge, these hairs are nearly one-fifth as long as the width of the femora, still scarcely long enough to call cilia, the black hairs on upper edge become long at base, the longest being about three-fourths as long as width of femora. Posterior tibiae slightly thickened, their tips black for about one-sixth their length; the glabrous stripe on upper surface quite distinct, although broken up by the irregular placing of the large bristles and a few black hairs, it extends upon the inner side of the tibiae at basal third. Fore tarsi about one and a half times as long as their tibiae, yellow, tip of first joint and the whole of second, third, and fourth joints, except their extreme bases, black, fifth dark yellow; the joints of decreasing length, first about as long as the two following taken together. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, still the apical half of fifth a little yellowish, usually quite distinctly so. Hind tarsi wholly black. Calypters, their cilia, and the halteres pale yellow.

Wings (fig. 89) grayish; costa without enlargement at tip of fifth vein; last section of fourth vein a very little bent just before its middle; third vein bent backward at tip; hind margin of wing a little indented at tip of fifth vein; anal angle nearly obsolete, the wing being narrowed at base.

Female.—Face wide, silvery white; third antennal joint smaller than in the male; fore coxae with minute black hairs on anterior surface; anal angle of wing a little more developed than in the male;

cilia of calypters sometimes black, although they seem to be yellow in most specimens. The fifth joint of fore tarsi more or less yellow, usually colored as in the male.

Redescribed from the type material and specimens from the following locations: Bennington, Vermont, June 24; Eastport, Maine, July 14; Southwest Harbor, Maine, July 10; Cohasset, Massachusetts, June 10; Big Stone City, South Dakota; Toronto, Ontario, May 23; Montreal, Quebec, June 7; Hood River, Oregon, June 3 and 4, 1917. (Cole).

Type locality.—Illinois.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 90. DOLICHOPUS SOCIUS Loew, var. GLADIUS, new variety.

Male.—Length 3.5–4.5 mm.; of wing the same. Face of moderate width, narrowed below, silvery white. Front shining green. Antennae black; first joint yellow below; third joint oval, usually with an obtuse point at tip, but sometimes rounded. Lateral and inferior orbital cilia yellowish white, a few of the upper cilia black.

Thorax shining green with more or less coppery reflections on the dorsum, which often form two distinct narrow vittae, leaving a green stripe between them; pleurae dulled with gray pollen. Abdomen green with coppery reflections and narrow black incisures, and with spots of white pollen on the sides of the segments. Hypopygium black, its lamellae of moderate size, somewhat oval in outline, nearly one and a half times as long as wide, white with narrow black border, jagged and bristly on apical margin, otherwise fringed with delicate black hairs.

Fore coxae wholly or almost wholly yellow, anterior surface with silvery pollen and minute pale hairs; middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with a row of delicate little yellow hairs on lower inner edge and with the black hairs on upper edge becoming longer at base, posterior tibiae with their tips black for about one-sixth their length. Fore tarsi slightly longer than their tibiae, black from the tip of the first joint, which is about as long as the two following taken together, second a little longer than third, fourth and fifth of about equal length, each shorter than the third. Middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters, their cilia, and the halteres yellow.

Wings (fig. 90) grayish, often distinctly tinged with brown in front of the third vein; costa with a very slight knotlike enlargement at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein;

anal angle nearly obsolete, the wing being narrowed toward its base.

Female.—Face broad; costa without enlargement at tip of first vein; anal angle of wing a little more developed; middle tibiae with one bristle below, their basitarsi without a bristle above. Cilia of the calypteres yellow; there are specimens which seem to belong to this variety that have these cilia black, but they may be the females of some other species. The fifth joint of fore tarsi black, not paler than those preceding it.

Described from numerous specimens from the following localities: New Hampshire; western New York, June 29 to August 4; Ontario, May 16–July 28; Quebec, July; Summerside, Prince Edward Island, Canada, July 21 (E. M. Walker).

Type.—Male, Cat. No. 23019, U.S.N.M., from Toronto.

This variety is of uncertain value. Some may not think it should have a distinctive name, others might even consider it a distinct species.

The two species *socius* and *brevimanus* have long been confused. Prof. J. M. Aldrich considered them synonymous after examining the types, but although I could find no difference of value when I looked over the type material in January, 1919, still it is my opinion that they are distinct species and that the specimens standing under *brevimanus* in the Loew collection are not the ones he described the species from; they do not quite answer his description, which gives the difference between the two forms very clearly. I find both forms in the material now in my hands. The most noticeable difference between them is that in *brevimanus* the black hairs on the sides of the hind femora descend to its lower edge, so that when viewed from below they show two rows of little black hairs with a glabrous space between them; while in *socius* there is a row of delicate little yellow hairs on the lower inner edge, which although sometimes easily overlooked can always be seen.

In going over the material having these yellow hairs on lower inner edge we find two forms which have quite a different appearance, still when we come to look for distinguishing characters they are not so easily separated as one would think. One series has the fifth joint of the fore tarsi yellow (in fact, the fifth joint of all the tarsi is more or less yellowish, at least at tip), the other series have the fifth joint of fore tarsi black, not paler than those preceding it. I found that the type specimens had the fifth joint yellow, so the first series is the typical form of *socius* Loew.

In the series before me, those with the yellow fifth joint also have the face a trifle more yellow on upper part; third antennal joint distinctly larger and longer, the first joint also seems to be more broadly yellow below; the row of yellow hairs on the lower inner edge of the hind femora a little longer; there is no trace of the small knotlike enlargement of the costa; the third vein is bent backward a little more at tip; the bend in the last section of fourth vein is less and beyond this bend the fourth vein is a little arched; the wing is a very little wider on its basal half; the lamellae of the hypopygium are also a very little smaller.

All these differences are rather small, but I can scarcely pass them by without separating the two forms, therefore I propose the name of *gladius* for the form with black fifth tarsal joints because of its shorter third antennal joint, the name meaning a short sword.

This is the form I have taken around Buffalo, New York; the typical form seems the most abundant in the New England States and also seems more widely distributed, being found in the Eastern States, Canada, North Dakota, and Oregon, while I have only seen this form from the Eastern States, eastern Canada, and western New York, but no doubt it will be found farther west.

No. 91. DOLICHOPUS BREVIMANUS Loew.

Dolichopus brevimanus Loew, Neue Beitr., vol. 8, 1861, p. 14; Mon. N. Amer. Dipt., pt. 2, 1864, p. 39.—Melander and Brues, Biol. Bull., vol. 1, p. 148.

Male.—Length 4 mm.; of wing 3.75 mm. Face rather wide, a little narrowed below, silvery white. Front shining green. Antennae black; first joint yellow below; third rather large; somewhat oval in outline, but pointed at tip. Lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Thorax green, its dorsum shining, with a little white pollen along the front; pleurae dulled with white pollen. Abdomen green with narrow black incisures and with spots of white pollen on the sides of the segments. Hypopygium black, its lamellae rather large, oval in outline, whitish with narrow black border, jagged and bristly at apex, fringed above with black hairs.

Fore coxae yellow with silvery pollen and very minute pale hairs on their anterior surface and a few black ones at inner upper corner, femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with the black hair on upper edge becoming long at base and with the little black hairs on their sides reaching the lower edge on both inner and outer sides, so when they are viewed from below there are two rows of little black hairs with a glabrous stripe between them on the lower surface of the femora. Posterior tibiae with their tips black for one-sixth their length. Fore tarsi a little longer than their tibiae, yellow, a little infuscated at tip, first joint about as long as second and third taken together, third to fifth each a little shorter than the joint preceding it; middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, hind tarsi wholly black. Calypters, their cilia, and the halteres yellow.

Wings (fig. 91) a little grayish; costa not thickened at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle nearly obsolete, the wings being narrowed toward their base, still the anal angle is a little prominent.

Female.—Face wide; third antennal joint about as long as broad; fore coxae with minute black hairs on the front surface; fore tarsi one-fourth longer than their tibiae; hind femora without the rows of black hairs below; wings brownish along the front with the anal angle more developed.

Redescribed from one pair from New Hampshire and several males from Ithaca, New York.

Type locality.—District of Columbia.

Type.—Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 92. DOLICHOPUS INDIGENA, new species.

Male.—Length 4.5 mm.; of wing 4 mm. Face rather wide, a little narrowed below, silvery white. Front shining green. Antennae black; first joint yellow on lower half or less; third joint a little longer than wide (in one specimen it is not any longer), scarcely pointed at tip, which is somewhat rounded. Lateral and inferior orbital cilia pale, a few of the upper cilia black.

Thorax green; dorsum shining, with coppery reflections at the suture; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae moderately large, somewhat oval in outline, jagged and bristly at apex, fringed with yellow or brownish hairs on upper edge, white with very narrow black border on apical and upper edges.

Fore coxae wholly or almost wholly yellow, with very minute yellow hairs on the anterior surface; middle coxae black with yellowish tips; hind coxae yellow, with a large black spot on outer surface and a small one on posterior side. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the hind with a row of minute delicate yellow hairs on lower inner edge. Posterior tibiae black at tip for one-sixth their length. Fore tarsi (fig. 92*a*) slightly longer than their tibiae, black from the tip of the first joint; first joint a little longer than the second and third taken together, which are of equal length, fourth and fifth joints also of equal length, and each a very little shorter than the third; last four joints each distinctly narrowed at base. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which is a little shorter than the three following joints taken together and without a bristle above, fourth and fifth of nearly equal length. Hind tarsi wholly black. Calypters, their cilia, and the halteres yellow.

Wings (fig. 92) grayish; costa with a slight knot-like enlargement at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing a little indented at tip of fifth vein; anal angle rounded, not very prominent.

Female.—Face wide, silvery white; fore tarsi with the second joint only a little longer than the third, last three joints of nearly equal length; costa without an enlargement; middle tibiae with one bristle below; fore and hind coxae as in the male.

Described from 18 males and 2 females. I have taken it at Buffalo, New York, June 24; South Wales, Erie County, New York, July 9; Toronto, Ontario, July 3 and 4. H. S. Parish took it at Coniston, Ontario, July 27. A. L. Melander took it at Mica, Washington, July 14; Lake McDonald, Glacier Park, Montana, August 14, and Priest Lake, Idaho, August 1.

Type.—Male, Cat. No. 23020, U.S.N.M., from Priest Lake, Idaho.

No. 93. DOLICHOPUS IDONEUS, new species.

Male.—Length 4–4.5 mm.; of wing 3.75–4 mm. Face rather narrow, silvery white. Front shining green. Antennae black; first joint conspicuously yellow below; third rather large, longer than wide, somewhat oval in outline, pointed at tip. Lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Thorax green with a very little white pollen along the front of the dorsum, and a distinct bronze vitta between the acrostichal bristles; pleurae dulled with white pollen. Abdomen green with slight coppery reflections and black incisures; the spots of white pollen along its sides large. Hypopygium black; its lamellae (fig. 93*a*) small, somewhat oval in outline, about one and a fourth times as long as wide; white, rather broadly black at apex, narrowly along the upper edge, which has about seven bristle-like hairs placed at regular and rather wide intervals.

Fore coxae yellow, with a few minute black hairs on inner edge of anterior surface near base, which is otherwise covered with very delicate, minute, yellow hairs, so small as to make the front surface appear nearly bare. Middle and hind coxae black, with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with the little black hairs on their sides descending to the lower edge, the lower rows on each side a little longer than those on the sides and leaving a broad glabrous stripe between them. Posterior tibiae with their tips black for one-fifth their length, a glabrous line just inside of the inner row of large bristles. Fore and middle tarsi about one and a fourth times as long as their tibiae; the former yellow, scarcely infuscated at tip, their joints of regularly decreasing length; middle tarsi black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia, still appearing yellow in certain lights.

Wings (fig. 93) grayish; costa not distinctly enlarged at tip of first vein, tapering to its tip; last section of fourth vein a little bent before its middle; hind margin of wing indented at tip of fifth vein; anal angle not prominent.

Described from 2 males; 1 taken by me at East Aurora, New York June 9, 1918; the other at Lynden, Vermont, June 13, 1914, by A. L. Melander.

Type.—Male, Cat. No. 23021, U.S.N.M., from East Aurora, New York.

This differs from *canadensis* in having the lamellae smaller and more regularly oval, the fore tarsi almost wholly yellow, and with the fifth joint shorter than the fourth; while in *canadensis* the fifth joint is a little longer than the fourth and the last two and a half joints are black.

No. 94. DOLICHOPUS CANADENSIS, new species.

Male.—Length, 4.75 mm.; of wing, 3.75 mm. Face moderately wide, silvery white. Front shining green with bronze reflections in the center. Antennae (fig. 94) black, first joint yellow below; third joint one and a half times as long as wide, oval, still obtusely pointed at tip. Palpi yellow. Lateral and inferior orbital cilia white, about seven of the upper cilia on each side black.

Thorax shining green with a little white pollen on the anterior portion of the dorsum, which has a rather broad, median, shining vitta; this vitta and a spot on each side at the transverse suture are more or less bronze colored; pleurae dulled with white pollen. Abdomen shining green with slight bronze reflections, which are more conspicuous on the apical segments, and white pollen on the lower part of its sides. Hypopygium black; its lamellae large, nearly twice as long as wide, rounded at apex, gradually tapering into the stem; white with a black border on the apical margin, the lower corner of which is jagged and bristly, fringed above with delicate brown hairs.

Fore coxae wholly yellow with silvery pollen and minute yellow hairs on the anterior surface, a few minute black hairs on their inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below on inner side. Posterior tibiae scarcely thicker than the others, a little infuscated at tip, especially on inner surface, where they are quite black for a short distance. All tarsi about one and a fourth times as long as their tibiae; anterior pair (fig. 94*a*) yellow, blackened from the middle of the third joint, fifth almost imperceptibly compressed, longer than fourth joint, about equal to third in length; middle tarsi black from the tip of the first joint; hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia, usually with a few of the upper ones yellowish.

Wings grayish; costa scarcely thickened at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, but the wing quite narrow; anal angle not developed.

Female.—Face wide, white; fore tarsi yellowish, black from the middle of the third joint, but the black not distinctly defined; last three joints of nearly equal length; wings tinged with brown in front, more broadly rounded than in the male, anal angle more developed. In both male and female the middle tibiae have three bristles below, one at basal, two at apical third, their basitarsi usually with a rather small bristle above at apical third.

Described from 7 males and 2 females. T. M. Willing took 1 at Regina, July 1; I took 5 at Kearney, Ontario, July 2–8; J. M. Aldrich took 2 at Erwin, South Dakota, in June, 1908, and 1 on Turtle Mountains, near Bottineau, North Dakota, June 21, 1918.

Type and allotype in the United States National Museum, taken at Kearney, Ontario.

Type.—Male, Cat. No. 23022, U.S.N.M.

No. 95. DOLICHOPUS ACUTUS, new species.

Male.—Length 4.25 mm.; of wing 3.5 mm. Face moderately wide, silvery white. Front green with bronze reflections. Antennae (fig. 95*a*) with the first joint yellow, a little darker on upper edge when viewed from the inner side, but the outer side has the upper edge deep black; this black nearly reaches across the apical end of the joint and is sharply defined; third joint nearly three times as long as wide, tapering into a rather acute point; arista subapical, inserted just above the point. Palpi pale yellow with yellowish hairs. Lateral and inferior orbital cilia white, about six of the upper cilia on each side black.

Thorax shining green with coppery reflections; pleurae dulled with white pollen. Abdomen shining green with coppery reflections, the apical segments mostly coppery; the white pollen on its sides rather abundant. Hypopygium black, its lamellae large, nearly as long as the hypopygium, elliptical, yellowish at base, becoming white. They have a broad black border on apical margin, where they are a little jagged and bristly, otherwise they are fringed with delicate brown hairs.

Fore coxae wholly yellow, their anterior surface covered with silvery pollen and minute white hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle; the former also has a smaller bristle on the posterior side close to the tip; hind femora nearly glabrous below. Posterior tibiae only slightly thicker than the others, their tips black for one-fifth their length, this black being poorly defined. All tarsi one and a fourth times as long as their tibiae; fore tarsi yellow with the last two joints black, still the base of the fourth is yellowish; first joint as long as the three following joints taken together; middle tarsi black from the tip of the first joint; hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia, which however have a yellowish color when viewed in certain directions.

Wings (fig. 95) grayish; costa not enlarged at tip of fifth vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fourth vein, rather evenly rounded, the anal angle being only moderately developed.

Described from 1 male taken at Springfield, Massachusetts, by G. Dimmock.

Type.—Male, Cat. No. 23023, U.S.N.M.

No. 96. DOLICHOPUS DEFECTUS, new species.

Male.—Length, 4 mm.; of wing, 3.5 mm. Face rather wide for a male, silvery white. Front dark shining green. Antennae (fig. 96*a*) black; first joint yellowish below, still sometimes the first joint is almost wholly black; third joint rather large, a little longer than wide, somewhat oval in outline, scarcely pointed at tip. Lateral and inferior orbital cilia pale, a few of the upper cilia black.

Thorax dark green or blue-green, shining; pleurae dulled with white pollen. Abdomen green, sometime with coppery reflections, its incisures black; the white pollen on its sides not very conspicuous. Hypopygium black; its lamellae moderately large, somewhat oval or more quadrilateral in outline, being rather truncate at tip and abruptly narrowed into the stem, white with narrow black border on apical and upper margins, jagged and bristly on outer end, fringed with blackish hairs above.

Fore coxae yellow with a small blackish spot on outer surface near the base, their anterior surface nearly bare, still with a few minute black hairs, especially along the inner side. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, but with a row of very delicate short hairs on lower inner edge; posterior tibiae black at tip for about one-fifth their length, the glabrous stripe on upper surface can be seen as a shining line between the rows of large bristles, inside of the inner row of bristles is another glabrous line extending nearly the whole length of the tibia. Fore and middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, anterior pair with the first joint as long or slightly longer than the two following taken together, second to fifth joints of regularly decreasing length. Hind tarsi wholly black. Calypters and halteres yellow, former with black cilia.

Wings (fig. 96) grayish; costa with a very small knotlike enlargement at tip of first vein; last section of fourth vein a little bent beyond its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle but little developed.

Female.—Probably the females with the cilia of the calypters black that I have placed with *socius* Loew are the females of this species, as some of them had yellowish cilia and others black.

Described from five males. One taken at East Aurora, New York, July 29; one at Niagara Falls, New York, July 20; one at Niagara Falls, Ontario, July 20; and two at Toronto, Ontario, July 4.

This form is almost like *socius*, var. *gladius*, differing from that in the color of the cilia of the calypters.

Type.—Male, Cat. No. 23024; U.S.N.M., from Toronto.

No. 97. DOLICHOPUS ABBREVIATUS, new species.

Male.—Length, 4 mm.; of wing the same. Face wide, silvery gray, scarcely narrowed below. Front shining green. Antennae black; first joint conspicuously yellow below; third joint moderately large, a little longer than wide, somewhat conical in outline, pointed at tip. Lateral and inferior orbital cilia yellowish, about five of the upper cilia on each side black.

Thorax green with coppery reflections, a little dulled with grayish pollen; pleurae with white pollen. Abdomen green with coppery reflections along the hind margins of the segments; the white pollen on its sides abundant. Hypopygium black; short but about as thick as usual; its lamellae (fig. 97) small, somewhat triangular in outline, but rounded at tip, yellowish with a rather narrow black border on the apical margin, which is a little jagged and bristly.

Fore coxae in the allotype wholly yellow, in the other specimen they are blackened at base on outer side, their anterior surface covered with silvery pollen and little yellow hairs; there are a few small black hairs on the inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter not ciliate below, but with the little black hairs descending to the lower edge of both outer and inner sides. Posterior tibiae scarcely thickened, narrowly black at tip; the glabrous stripe between the large bristles not conspicuous. Fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint, which is as long as the three following taken together; fifth joint very slightly longer than the fourth. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which is without a bristle on its upper surface. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia with which are mixed several pale hairs.

Wings grayish, tinged a little with yellowish in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein only a little bent beyond basal third; third and fourth veins a little convergent; hind margin of wing a little indented at tip of fifth vein, rather evenly rounded, the anal angle not being very prominent.

Described from two males. One was taken by C. W. Johnson at Machias, Maine, July 21; the other was taken by L. M. Turner at Ungava Bay, Labrador, July 22, and is in the United States National Museum.

Type.—Male, Cat. No. 23025, U.S.N.M., from Labrador.

The hypopygium is remarkably short but as thick as usual; it is formed about as it is in *ramifer* and *cuniculus; ramifer* differs from both of the other species in having a stump of a vein at the bend in last section of fourth vein. It differs from *cuniculus* in having the first antennal joint yellow below, and the third and fourth veins convergent beyond the bend in fourth; in *cuniculus* the antennae are wholly black, with the third joint smaller, and the third and fourth veins are nearly parallel beyond the bend in fourth.

No. 98. DOLICHOPUS CUNICULUS, new species.

Male.—Length 3.5 mm.; of wing the same. Face wide, silvery white. Front dark shining green with the white pollen of the face extending narrowly along the orbits. Antennae (fig. 98*b*) black with the lower apical corner of the first joint a little yellowish; third joint a little longer than wide, rounded at tip. Lower orbital cilia white.

Thorax green; dorsum with a median bronze vitta, on each side of which there is a shining green line, lateral portions of the dorsum with bronze reflections; pleurae dulled with a little white pollen. Abdomen green; the white pollen on its sides abundant and reaching upon the dorsum. Hypopygium (fig. 98) short and rather slender, reaching forward to about the middle of the fourth abdominal segment; its lamellae very small, somewhat triangular, yellowish, the apical margin scarcely darker and not jagged, lamellae fringed with delicate whitish hairs.

Fore coxae yellow with a blackish spot at base on outer surface, anterior surface covered with silvery pollen and little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Posterior tibiae scarcely stouter than the others, narrowly black at tip. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is as long as the remaining four joints taken together, second joint scarcely longer than the third, fifth shorter than third but longer than fourth, last four joints very slightly compressed. Middle tarsi about one and a third times as long as their tibiae, black from the tip of the first joint, which has two bristles on upper edge, one at basal fourth and one at basal third. Calypters yellow with black cilia; halteres yellow with their stem brownish.

Wings (fig. 98*a*) grayish; costa rather thick beyond the tip of first vein but without an enlargement; last section of fourth vein with a small but rather abrupt bend near its middle; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being poorly developed.

Described from 1 male taken by me on Grand Island, New York, August 17, 1913.

Type.—Male, Cat. No. 23026, U.S.N.M.

This may prove to be the male of *brunneus* Aldrich, it differs from the type of that species (which was described from a single female) in having the color of thorax and abdomen decidedly green, not bronze brown as in *brunneus;* the bend in the last section of fourth vein is sharper in this male and slightly nearer its middle, and the middle basitarsi have two bristles on upper edge (there is only one on one basitarsus in the type, but one may have been broken off) in this species, while in *brunneus* there is none. The middle tibiae in both forms have one bristle below.

The name was suggested by the small hypopygium which reminded me of a rabbit's tail.

No. 99. DOLICHOPUS BRUNNEUS Aldrich.

Dolichopus brunneus Aldrich, Kansas Univ. Quart., vol. 2, p. 14, 1893.

Female.—Length 3 mm.; of wing 2.8 mm. Face broad, with grayish white pollen which is slightly tinged with yellow near the antennae. Front dark green, somewhat shining. Antennae wholly black; third joint scarcely longer than wide, somewhat pointed at tip. Lower orbital cilia pale.

Thorax and abdomen bronze-brown; dorsum of thorax a little dulled with brown pollen; pleurae more black with white pollen.

Fore coxae yellow, blackened at base on outer surface, the black not sharply limited but shading into the yellow; anterior surface with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle. Posterior tibiae blackish at tip, slightly thicker than the others. Middle tibiae with one bristle below. Fore tarsi about as long as their tibiae, black from the tip of the first joint, which is scarcely as long as the remaining four joints taken together; third and fifth joints of equal length, about two thirds as long as the second and a very little longer than the fourth. Middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, which has no bristle on its upper surface. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 99) tinged with brownish gray; costa rather thick from the tip of the first vein and tapering to its tip, still the costa could not be called enlarged at tip of first vein; last section of fourth vein only slightly bent at a point beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle not being developed.

Redescribed from the single female type specimen, which was taken by J. M. Aldrich at Brookings, South Dakota, June 18, 1891, and is in his collection.

No. 100. DOLICHOPUS RAMIFER Loew.

Dolichopus ramifer Loew, Neue Beitr., vol. 8, 1861, p. 19; Mon. N. Amer. Dipt., pt. 2, 1864, p. 52.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 12.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 3–4.5 mm.; of wing 3–4 mm. Face wide, white, a little narrowed below. Front bluish black, usually with purple reflections, very shining. Antennae black; first joint usually a little yellowish on the lower apical corner; third joint nearly two and a half times as long as wide, nearly straight above, broadly rounded below, pointed at tip, arista inserted a little before the point. Palpi yellow. Lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Dorsum of thorax and the abdomen dark bronze brown with slight green or reddish coppery reflections; pleurae more green with whitish pollen, one male from Colorado is wholly dark shining green, second and third abdominal segments with conspicuous white hairs on their sides. Hypopygium black, short and stout; its lamellae (fig. 100*a*) small, somewhat triangular or perhaps they could be called crescent-shaped, whitish with a narrow black border on the rounded apical margin, which is scarcely jagged but fringed with brown hairs.

Fore coxae yellow, blackened at base on outer side, anterior surface with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle femora usually with two, hind femora with one preapical bristle, the latter ciliated on lower inner edge with a few delicate whitish hairs, the longest of which are nearly as long as the width of the femora. Posterior tibiae thickened, black at tip for one fourth their length; the usual glabrous stripe between the large bristles although rather wide is somewhat broken by little black hairs, on basal half of inner surface the little black hairs become so small as to give it the appearance of being glabrous; bristles on upper surface large. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is about as long as the three following joints taken together, second joint only a little longer than third, this and fifth of about equal length, fourth a little shorter. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which is without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 100) grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent at right angles at its middle, upper bend rounded, lower bend with more or less of a stump of a vein (which suggested the name); hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being rather prominent.

Female.—Like the male, except that the face is a little wider, third antennal joint about half as large, and the middle femora usually have but one bristle before the tip.

Redescribed from numerous males and females from the following localities: Brookings, South Dakota; Michigan; Montana; Idaho, several places, July–August; Lafayette and Shelby, Indiana, May 24–July 26 (Aldrich); Iowa (Osborn); Greeley, Colorado, August 31; Lance Creek, Sheridan and Natrona County, Wyoming, August 14–31 (Wheeler); Wells, Nevada, June 6; Lawrence and Baldwin, Kansas, May; western New York, May 21–September 19; southern Ontario, rfom Toronto to Chatham, May 30–July 3; Colorado Springs, Colorado, June 10; Illinois; Sandusky, Ohio, June 30; Los Angeles, California, May 3; Washington, several places, July to August. I have found it abundant in greenhouses around Buffalo, New York, in February and March.

Type localities.—Nebraska; Lake Winnipeg; New Rochelle, New York. Aldrich reports it from Michigan, Montana, Kansas, and Idaho. Chagnon from Montreal, Quebec. Melander and Brues from Illinois, Texas, and Wyoming. Johnson, Insects of New Jersey, from Monmouth County, and Avalon, New Jersey, August 22–31.

No. 101. DOLICHOPUS INCISURALIS Loew.

Dolichopus incisuralis Loew, Neue Beitr., vol. 8, 1861, p. 25; Mon. N. Amer. Dipt., pt. 2, 1864, p. 74; Centuries, vol. 7, 1866, No. 80 (*platyprosopus*).—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 3–4.5 mm.; of wing 3.5–4 mm. Face rather narrow, silvery white. Front shining green. Antennae black; first joint reddish below; third rather small, about as long as broad, somewhat pointed at tip. Lateral and inferior orbital cilia pale, about five of the upper cilia on each side black.

Thorax shining green with coppery reflections on the anterior part of the dorsum where there is a little white pollen; pleurae dulled with whitish pollen. Abdomen green with black incisures and considerable white pollen, which is more conspicuous along the sides. Hypopygium black; its lamellae moderately large, somewhat oval in outline, white with a narrow black border, jagged and bristly at apex.

Fore coxae yellow with a small blackish spot at base on outer side, anterior surface with little black hairs on inner edge and sometimes at base and minute yellow hairs on outer edge. Middle and hind coxae black with yellow tips; sometimes the posterior pair are yellow on inner side. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the hind ciliated with delicate yellow hairs on the lower inner edge, these hairs about half as long as the width of the femora. Posterior tibiae black at tip, slightly thickened; on inner surface there is a glabrous stripe inside of the inner row of large bristles which near the base covers almost the whole width of the tibia. Fore tarsi nearly one and a half times as long as their tibiae, infuscated from the tip of the first joint, first, and second joints taken together nearly as long as the tibiae, second about half as long as first and a little longer than third; fourth and fifth of nearly equal length, each being a little shorter than the third, still the fifth is a little the shortest. Middle tarsi a little more than one and a fourth times as long as their tibiae, black from the tip of the first joint, which is without a bristle above. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 101) tinged with gray; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent some distance beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being rounded, not very prominent.

Female.—Face wide, white; fore tarsi not or but little longer than their tibiae, and with the fifth joint a little longer than the fourth; otherwise about as in the male. Middle tibiae with one bristle below.

Redescribed from the type specimens and 7 males. Two of the latter were taken at Ithaca, New York; 1 at Colden, Erie County, New York, July 23; 1 at Niagara Falls, Ontario (Van Duzee), July 20, and 2 at Turkey Run, Indiana (Aldrich), August 20, 1918.

Type locality.—Trenton Falls, New York; the type of *platyrosopus* was from Hudson Bay Territory. Chagnon reports it from Montreal, Quebec. Insects of New Jersey, from Merchantville, New Jersey, June 28.

Synonymy by Aldrich, Catalogue, 1905, from types.

Types.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 102. DOLICHOPUS MELANOCERUS Loew.

Dolichopus melanocerus Loew, Cent., vol. 3, No. 86; Mon. N. Amer. Dipt., pt. 2 p. 330.—Melander and Brues, Biol. Bull., vol. 1, p. 148.

Male.—Length 4 mm.; of wing the same. Face rather wide, covered with coarse yellow pollen. Front shining green, sometimes coppery in the center. Antennae wholly black; third joint oval, about one and a fourth times as long as wide, usually broadly rounded at tip, but sometimes quite pointed. Lateral and inferior orbital cilia whitish, a few of the upper cilia black.

Thorax shining green with coppery reflections, especially between the acrostichal bristles; pleurae dulled with grayish pollen. Abdomen shining green with black incisures and coppery reflections, its sides dulled with white pollen. Hypopygium black; its lamellae (fig. 102*a*) of moderate size, oval or subquadrilateral in outline, whitish with wide black border on the apical margin, which extends narrowly along the upper and lower edges, jagged and bristly at apex, fringed with rather long brown hairs on upper edge.

Fore coxae yellow with a rather large blackish spot at base on outer side, their anterior surface clothed with minute blackish hairs, which appear yellowish in certain lights. Middle and hind coxae black almost to their tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the former also has a small bristle on the posterior side near the tip in the type specimen, the latter ciliated on lower inner edge with yellow hairs, the longest of which are about as long as the width of the femora. Posterior tibiae with black tips, the glabrous stripe on upper surface broad and extending upon the inner side which is largely glabrous. Fore and middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 102) tinged with brownish gray; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing only slightly indented at tip of fifth vein; anal angle rounded, not at all prominent.

Female.—Face twice as wide as in the male, whitish, tinged a little with yellow on the upper part; third antennal joint about as long as wide; hind femora without cilia; the glabrous stripe on hind tibiae confined to the space between the rows of large bristles; costa without enlargement; the fore coxae are blackened at base as in the male; otherwise as in the male.

Redescribed from the single type specimen and 5 males and 2 females taken as follows: 2 males and 1 female at New Bedford, Massachusetts (Hough), May 20, 1896; 1 male at Montreal, Quebec, July 7, 1906; 2 males at Kearney, Ontario, July 29, 1911, and 1 female at the same place July 5, 1909 (Van Duzee); 1 male at Sudbury, Ontario, July 22, 1915.

Type locality.—"Canada." Melander and Brues report it from Massachusetts.

This species is closely related to *pantomimus* Melander and Brues, but differs in having the anal angle of the wing rounded off, not at all prominent, fore coxae with a blackish spot at base; the lamellae of the hypopygium are oval or almost quadrilateral in outline; while in *pantomimus* they are more triangular in form, the fore coxae are wholly yellow in all the specimens I have seen, and the anal angle of the wing is quite prominent.

No. 103. DOLICHOPUS PANTOMIMUS Melander and Brues.

Dolichopus pantomimus Melander and Brues, Biol. Bull., vol. 1, 1900, p. 142.—Aldrich, Cat. N. Amer. Diptera, 1905, p. 303.

Male.—Length 3.5–4.5 mm.; of wing 3–3.5 mm. Face rather narrow, golden yellow. Front shining green. Antennae wholly black; third joint large, about twice as long as wide, pointed at tip, arista inserted a considerable distance before its tip. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Dorsum of thorax shining green, sometimes with a median coppery vitta, (in one specimen this median line is deep blue), and with a little white pollen along the anterior edge; pleurae dulled with whitish pollen. Abdomen shining green, sometimes with slight coppery reflections, with black incisures and white pollen, which forms spots on the sides of the segments. Hypopygium black; its lamellae (fig. 103*a*) of moderate size, somewhat triangular in outline, but with the apical margin rounded, jagged and bristly, whitish with a rather wide, black, apical border.

Fore coxae wholly yellow with minute pale hairs on the anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliate on their lower inner edge with pale hairs for three-fourths their length, these hairs placed at regular but rather wide intervals and scarcely as long as the width of the femora. Posterior tibiae black at tip; the glabrous stripe on upper surface wide, extending upon the inner side of the tibiae. Fore and middle tarsi yellow, more or less darkened toward their tips. Fore tarsi one and a fourth times as long as their tibiae, the joints of regularly decreasing length. Middle tarsi one and a third times as long as their tibiae, first joint without a bristle. Middle tibiae with one small bristle below. Hind tarsi wholly black. Calypters and halteres yellow, the latter with black cilia.

Wings (fig. 103) tinged with brownish gray; costa with a knotlike enlargement at tip of fifth vein; last section of fourth vein a little bent near its basal third; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Redescribed from the type specimen and 8 males. Two of the latter were taken by C. W. Johnson at Niagara Falls, New York, June 23; I took 3 at Niagara Falls, Ontario, July 31, 1910; R. C. Shannon took 1 at Dead Run, Fairfax County, Virginia, June 22, 1915; and 2 were taken at Plummers Island, Maryland, May 9, 1914.

Type locality.—New Bedford, Massachusetts.

Type.—In American Museum of Natural History.

No. 104. DOLICHOPUS FLAVICILIATUS, new species.

Male.—Length 4 mm.; of wing the same. Face rather narrow, being narrowest below, brownish, in the type almost black near the antennae, only a little silvery at its extreme lower edge. Front shining green. Antennae (fig. 104*a*) wholly black, second joint small; third large, twice as long as wide, rather obliquely cut off at tip so as to form a point at upper apical angle; arista about as long as the antenna and inserted near apical third of third joint. Lateral and inferior orbital cilia yellowish, a few of the upper cilia black.

Thorax dark green, not very shining; pleurae dulled with gray pollen. Abdomen green; last two segments with coppery reflections; the white pollen on its sides conspicuous. Hypopygium black; its lamellae (fig. 104*b*) of moderate size, somewhat oval in outline, a little longer than wide, with a small notch near the middle of the apical margin, which cuts nearly through the black border, below this the apical margin is jagged and bristly, above and on upper edge they are fringed with rather long fine hairs.

Fore coxae yellow, with a large blackish spot at base on outer side, anterior surface with delicate yellow hairs, a few minute black ones near the tip on inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with yellow hairs as long as the width of the femora, on lower inner edge for two thirds their length, and with long black hairs on upper edge. Posterior tibiae black at tip for one-fifth their length, thickened, glabrous on most of their inner side, except on apical fourth. Fore and middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, first joint of each as long as the two following taken together; fifth joint of fore tarsi longer than tibiae the fourth; middle basitarsi without a bristle above, their with one bristle below. Calypters, their cilia and the halteres yellow.

Wings (fig. 104) slightly grayish; costa with a knotlike enlargement at tip of first vein; last section of fourth vein bent at its middle, hind margin of wing scarcely indented at tip of fifth vein but slightly bulging just before this point and very slightly hollowed between there and the tip of sixth vein; anal angle not very prominent.

Described from 1 male taken by H. S. Parish at Waubamic, Ontario, July 14, 1915.

Type in the collection of A. L. Melander. It met with an accident after the description was written and is in poor shape, the fore legs being broken off.

No. 105. DOLICHOPUS DECORUS, new species.

Male.—Length 4.5 mm.; of wing 5 mm. Face wide, covered with coarse gray pollen, which is tinged a little with yellow. Front shining blue-green. Antennae black; lower half of first joint yellow; third joint large, nearly twice as long as wide, nearly straight above, rounded below, pointed at tip, arista inserted about the middle of the upper edge. Lower orbital cilia yellowish white, about 10 of the upper cilia on each side black.

Thorax blue-green with bronze reflections which form three poorly defined vittae on the fore part of the dorsum, which is covered with yellowish gray pollen; pleurae dulled with gray pollen. Abdomen green with coppery reflections and narrow black incisures, somewhat dulled with white pollen, which is no thicker on the sides than on the upper surface. Hypopygium black, its lamellae large, oval, jagged and bristly on apical margin, white with a narrow black border on apical and upper margins, fringed on upper edge with black hairs.

Fore coxae yellow with a black spot at base on outer side, their anterior surface covered with thin silvery pollen and with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on apical half of the lower inner edge with yellow hairs, the longest of which is scarcely as long as the width of the femora. Posterior tibiae a little thickened, their tips black for one-sixth their length; the glabrous stripe on upper surface between the rows of large bristles distinct but not quite reaching their base, basal third of inner surface also glabrous. Fore tarsi about one and a third times as long as their tibiae, black from the tip of the first joint, which is as long as the two following joints taken together; middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above near apical fourth. Middle tibiae with three bristles below, two near apical third and one at basal third. Hind tarsi wholly black, one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 105) uniformly tinged with brownish gray; costa a little thickened just before the tip of first vein and tapering to its tip, still this enlargment is a little more conspicuous just at the tip of first vein; last section of fourth vein rather sharply bent at its middle and ending a little before the apex of the wing; third vein bent backward toward its tip, still the tips of third and fourth vein widely separated; hind margin of wing indented at tip of fifth vein, rather evenly rounded, the anal angle being but little developed.

Female.—Face wide with coarse white, almost silvery pollen; fore coxae sometimes wholly yellow; hind coxae largely yellow, sometimes almost wholly so; middle tibiae and tarsi as in the male; wings as in the male.

Described from 1 male and 3 females. The male was taken at Algonquin, Illinois (Nason); 2 females were taken at Battle Creek, Michigan (Aldrich); 1 female at Buffalo, New York, June 10, 1908 (Van Duzee).

Type.—Male, Cat. No. 23027, U.S.N.M.

The male and female of this species can easily be separated from those of *setosus* Loew by the three bristles on the lower surface of the middle tibiae and the large bristle on upper edge of the middle basitarsi; in *setosus* there is only one bristle on the lower edge of the middle tibiae and no bristle at all on the middle basitarsi. This last character is the most constant one.

No. 106. DOLICHOPUS SETOSUS Loew.

Dolichopus setosus Loew, Cent., vol. 2, 1863, p. 63; Mon. N. Amer. Dipt., pt. 2, 1864, p. 73.

Male.—Length 4.5–5 mm.; of wing the same. Face rather narrow, narrowest below, silvery white. Front blue or violet, shining. Antennae black; first joint yellow below; third joint rather large, longer than wide, somewhat conical in outline, a little pointed at tip. Lateral and inferior orbital cilia yellowish white, about six of the upper cilia on each side black.

Thorax green, sometimes almost violet; dorsum with a little gray pollen on its anterior portion, which sometimes has bronze reflections; pleurae with a little gray pollen. Abdomen green with bronze and sometimes blue reflections; the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 106*a*) moderately large, somewhat triangular in outline with the upper apical corner rounded, whitish with a black apical border, jagged and bristly at lower apical corner, otherwise the apical margin is fringed with long blackish hairs.

Fore coxae yellow with a small brownish spot at base on outer side, anterior surface with white pollen, its inner half with black hairs, on outer half the hairs are mostly yellow. Middle and hind coxae black with yellow tips, femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated below with long delicate hairs for their entire length, those on basal third rather short; the longest of the hairs are nearly twice as long as the width of the femora and a little wavy at tip. Posterior tibiae black at tip for one-sixth their length, a little thickened; the glabrous stripe on upper edge quite distinct but not reaching the tip; most of the inner surface is glabrous, but this narrows apically. Fore tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, which is about as long as the three following joints taken together, all the joints of regularly decreasing length. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, their basitarsi without a bristle above. Middle tibiae with one long bristle below. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 106) grayish; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein bent two-fifths its length from its base, from which point it is very nearly parallel with fourth; hind margin of wing a little indented at tip of fifth vein, rather evenly rounded, the anal angle not being very prominent.

Female.—Face wide, silvery gray; third antennal joint about as wide as long, nearly round in outline, but pointed at tip; fore tarsi black from the tip of the first joint, still the base of the second is a very little yellow; wings as in the male, except that there is no enlargement of the costa at tip of first vein; middle tibiae with one long bristle below, their basitarsi without a bristle.

Redescribed from the single type specimen, which is from Massachusetts; 1 male from the Osten Sacken collection, taken at New York; 1 male taken at East Aurora, New York, June 11, 1911; 1 male from Woods Hole, Massachusetts; 1 male taken at New Bedford, Massachusetts; and 1 female taken at Ridgeway, Ontario, June 6, 1909.

The female on the same pin as the type is not the same species, one female standing with these marked "*setosus* ?" is the female of *flagellitenens* Wheeler; another female standing with the Osten Sacken male may be this species but has no head.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 107. DOLICHOPUS SERRATUS, new species.

Male.—Length 5.2 mm.; of wing 5 mm. Face rather wide, narrower on lower half, silvery white. Front shining green. Antennae black; first joint yellow below, especially at apex; third joint oval, a little longer than wide, rather rounded at tip. Lateral and inferior orbital cilia whitish, about six of the upper cilia black.

Thorax shining green with bronze reflections, which form broad poorly defined vittae on the dorsum, which has yellowish white pollen along the front; pleurae dulled with white pollen. Abdomen shining green with coppery reflections, especially on the apical segments; the white pollen of the sides abundant and extending thinly over the dorsum. Hypopygium black; its lamellae moderately large, somewhat quadrangular in outline, being cut off rather squarely at apex, and widening out rather abruptly from the stem on upper edge at base, yellowish white with a narrow black border on apical and upper margins, jagged and bristly along the apical end, fringed above with rather long dark hairs, below with delicate pale hairs.

Fore coxae yellow with a brown spot at base on outer side; anterior surface with silvery white pollen, clothed with delicate pale hairs on outer half and little black hairs on inner half. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliate with yellowish hairs on apical two thirds of lower inner edge, the longest of these hairs fully as long as the width of the femora and near its apex. Posterior tibiae deep black for one-fourth their length, a little thickened; the glabrous stripe on upper surface narrow, a wider glabrous stripe on the inner surface does not reach the base and is separated from the one on upper edge by the inner row of large bristles between which are little hairs. Fore and middle tarsi black from the tip of the first joint, the former one and a fourth, the latter one and a third times as long as their tibiae, rather stout; first joint of fore tarsi about as long as the remaining four taken together, second, third, and fourth a little narrowed at base so as to give the tarsi a serrated appearance; middle basitarsi brownish almost to their base, without a bristle above, their tibiae with one bristle below. Hind tarsi wholly black, nearly one and a half times as long as their tibiae. Calypters and halteres yellow, the cilia of the latter reddish yellow, but in certain lights appearing black.

Wings (fig. 107) grayish; costa stout, a little enlarged at tip of first vein, gradually tapering to its tip; last section of fourth vein bent a little beyond its basal third, its tip widely separated from the tip of third, which bends backward; hind margin of wing a little indented at tip of fifth vein, rather evenly rounded, the anal angle not being very prominent.

Described from 1 male taken on the summit of Mount Katahdin, Maine, at 5,215 feet elevation, on August 19, 1902, and 1 male taken at Wyandarch, Long Island, New York, July 1, 1910, by W. T. Davis.

Type.—Male, Cat. No. 23028, U.S.N.M., from Maine.

No. 108. DOLICHOPUS RENIDESCENS Melander and Brues.

Dolichopus renidescens Melander and Brues, Biol. Bull., vol. 1, p. 143.

Male.—Length 4.5–5 mm.; of wing the same. Face very wide and short, yellowish brown. Front violet, green along the orbits and lower edge, sometime wholly blue-green, shining. Antennae wholly black; third joint a little longer than wide, obtusely pointed at tip; palpi dark yellow with black hairs. Lateral and inferior orbital cilia white, about six to eight of the upper cilia on each side black.

Thorax dark shining green, still the dorsum is slightly dulled with almost invisible brown pollen; pleurae dulled with white pollen. Abdomen dark green with slight bronze reflections and a little white pollen on its sides. Hypopygium black; its lamellae (fig. 108*a*) of moderate size, somewhat triangular in outline, white with wide black border on apical margin, which is jagged and bristly.

Fore coxae yellow with a blackish spot at base on outer side, their anterior surface with rather numerous black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with two preapical bristles, placed one before the other, the latter ciliated on apical half of lower inner edge with long black hairs, the hairs being inserted rather widely apart, the longest about as long as the width of the femora. Posterior tibiae a little thickened, black at tip, more extensively so on inner side, where the black sometimes reaches three-fourths their length, the yellow usually reaching the tip on the lower surface; on most of the inner surface the hairs are very minute, giving it the appearance of being glabrous. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is nearly as long as the three following joints taken together, fifth joint shorter than third and longer than fourth. Middle tarsi one and a fourth times as long as their tibiae, black from the pit of the first joint, which is without a bristle above. Middle tibiae with a large bristle before apical third and two small ones just before it on the lower surface. Hind tarsi fully one and a half times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 108) grayish, usually strongly tinged with brown in front of third vein; costa with small enlargement at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing a little indented at tip of fifth vein; wings of rather parallel width, still a little narrowed from tip of sixth vein to the anal angle, which is prominent; the hind margin is a little sinuous between the tips of fifth and sixth veins, forming a small lobe near sixth.

Female.—Face nearly the same width as in the male, yellowish gray; hind femora without cilia below; hind tibiae a little thickened, not much blackened at tip; hind margin of wing more rounded, making the wing wider in the middle than it is in the male; anal angle rounded, not very prominent, veins slightly bordered with brown; costa not enlarged at tip of first vein. The bristles of the middle tibiae and tarsi and middle and hind femora as in the male.

Redescribed from 8 males and 2 females. These were taken at the following locations: Hagerman, and Craigs Mountain, Idaho; South Dakota; Bottineau, North Dakota, June 20, 1918—all taken by J. M. Aldrich; Bozeman, Montana, June 4, 1911; Colorado, taken by Baker; 1 male taken at Dauphin, Manitoba, June 22, 1912, by Dr. E. M. Walker, and 1 male at Nelson, British Columbia, July 1, 1910.

Type.—In American Museum of Natural History; from North Park, Colorado.

No. 109. DOLICHOPUS HASTATUS Loew.

Dolichopus hastatus Loew, Mon. N. Amer. Dipt. pt. 2, 1864, p. 59.—Aldrich Kansas Univ. Quart., vol. 2, 1893, p. 13.

Male.—Length 5 mm.; of wing the same. Face rather wide and long, a little narrowed in the middle, pale golden yellow. Front green with bronze reflections and a little yellowish pollen along the orbits. Antennae (fig. 109*a*) yellow; third joint brown on apical half or more, somewhat orbicular in outline; arista inserted in a notch on upper edge of third joint, black, its basal joint long and seems to form two thirds of the arista, the remainder seems to be jointed at its basal third, from which joint it is compressed into a fusiform lamella, which is whitish at tip and fringed above and below with minute hairs on its edges, making it appear much wider; this lamella occupies about half the length beyond the basal joint. Proboscis brown; palpi yellow. Lateral and inferior orbital cilia pale yellow, about ten of the upper cilia on each side black.

Thorax green, dorsum with the beginings of two dull coppery vittae in front, and dulled with almost invisible brownish pollen, except along the front edge, where the pollen is gray; pleurae dulled with white pollen. Abdomen green with black incisures and slight bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, oval in outline, longer than wide, yellowish white, sometimes quite yellow or almost yellowish brown, with a black border, which is wide on apical, narrow on upper margin, jagged and bristly at apex, fringed with delicate black hairs above,

Fore coxae yellow with a small brown spot at extreme base on outer side; anterior surface clothed on all but its outer edge with little black hairs; the outer edge appears glabrous. Middle and hind coxae black with yellow tips. Femora and tibae yellow. Middle and hind femora each with one preapical bristle, the hind not ciliated below, but with the little black hairs on the sides reaching the lower edge. Middle tibiae with their tips a little enlarged and black, also with a preapical brown ring, between which and the black of the tip is a glabrous, shining, white spot on their upper side. Hind tibiae only slightly thickened, blackish at tip, especially below; the glabrous stripe on upper surface distinct, but broken by a few hairs and not reaching either base or tip; inside of the inner row of large bristles there is also a narrow glabrous line, which is widest toward the base and reaches the tip, but is broken by a few little hairs where the infuscation of the tip begins. Fore tarsi about equal to their tibiae in length, black from the tip of the first joint, which is about as long as the three succeeding joints taken together, fifth a little shorter than the fourth. Middle tarsi about equal to their tibiae in length; last three joints distinctly, although only slightly, compressed, black; first joint black at base and tip, yellow in the middle. Hind tarsi one and a third times as long as their tibiae, black from the tip of the first joint, rather stout, almost imperceptibly compressed; first joint sometimes blackened at base below and furnished with but two large bristles above. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 109) grayish, tinged with brownish in front and along the veins; costa not enlarged at tip of first vein; last section of fourth vein bent near one-third its length; third vein bent backward a little at tip; hind margin of wing scarcely indented at tip of fifth vein, from this point to the tip of sixth vein is a deep bisinuate excision which leaves a prominent lobe at anal angle.

Female.—Face wide and short, almost brown; arista about normal, its basal joint being about one-third of its length; front green or blue-green; middle tibiae yellow with the tip slightly enlarged and tinged with brown; there is a small glabrous spot on upper side at about basal third; middle tarsi very slightly compressed; all tarsi black from the tip of the first joint; hind tibiae only slightly brownish at tip and without any glabrous line inside of the inner row of bristles; wings rather broadly and evenly rounded on their posterior margin; anal angle prominent.

Redescribed from 4 males and 10 females taken by J. M. Aldrich on the top of Mount Constitution, Orcas Island, Washington (2,400 feet), July 7, 1905, and July 17, 1909; 1 male taken at Ilwaco, Washington, July, 1917, by A. L. Melander; and 1 male and 2 females taken at Eureka, California, May 22 to June 6; R. P. Currie took a female at Kaslo, British Columbia, June 10.

Type locality.—Sitka, Alaska. J. M. Aldrich reports it from Mount Hood, Oregon.

No. 110. DOLICHOPUS COMPTUS, new species.

Male.—Length, 5 mm.; of wing the same. Face wide, covered with yellowish gray pollen. Front blue-green with a little yellowish pollen along the orbits. Antennae (fig. 110*a*) yellow; third joint nearly orbicular in outline, its apical half blackish; arista inserted in a notch on upper edge of third joint, black, the tip with a fusiform enlargement, which is about one-third of the length of arista and is fringed on both upper and lower edges with minute hairs; this enlarged tip forms a distinct joint to the arista; proboscis blackish; palpi yellow. Lateral and inferior orbital cilia pale yellow, about eight of the upper cilia on each side black.

Thorax green with coppery reflections and a little yellowish pollen on the anterior part of the dorsum; pleurae dulled with white pollen. Abdomen green with slight bronze reflections. Hypopygium black, short; its lamellae small, somewhat oval in outline, but tapering into the stem, about one and a fourth times as long as wide, yellowish with a black border on the rounded apical margin, which is a little jagged and bristly at its upper corner, otherwise fringed with black hairs.

Fore coxae yellow, with only a trace of brown at base on outer side, their anterior surface clothed with stiff black hairs, except at base on outer edge where there are a few pale hairs. Middle and hind coxae black with yellow tips. All trochanters with a small brown spot below. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the little black hairs on their sides reaching the lower edge. Fore tibiae slightly, the middle and hind ones conspicuously brown at tip. Middle tibiae also with a faint brownish ring near apical third and with a narrow glabrous line on upper surface, which expands a little beyond the brown ring, so as to form a small glabrous spot. Posterior pair thickened; the glabrous stripe on upper surface distinct, but it does not reach either base or tip. All tarsi wholly black, except the first joint of fore tarsi, which is yellowish below. Fore and middle tarsi stout, very slightly compressed, a little longer than their tibiae, the first joint being about as long as the three succeeding joints taken together; middle basitarsi without a bristle above. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 110) grayish, very slightly darker in front of second vein; costa not enlarged at tip of first vein; last section of fourth vein bent before its middle; third vein bent backward a little toward its tip; hind margin of wing a little indented at tip of fifth vein; the wing widest just back of this point; wing with a large lobe from the tip of sixth vein to the anal angle.

Described from 1 male taken at Tallac Lake, Tahoe, California, July 3, 1915, by E. P. Van Duzee.

This differs from *hastatus* Loew in having the lamella on the arista longer; the hypopygium is much shorter and the lamellae are very much smaller than in *hastatus;* the wing has nearly the same lobe at the anal angle, but here the hind margin is nearly straight between the tips of fifth and sixth veins, while in *hastatus* it is deeply sinuous between these points.

The two species resemble each other very much in the form and color of the antennae and arista, the lobe at tip of sixth vein, the color of middle tibiae and the glabrous spot on their upper surface.

This is another example of the remarkable grouping of two or more species with several prominent and striking characters in common and yet with good distinguishing points by which to separate them, which we meet in this genus.

Type.—In California Academy of Sciences.

No. 111. DOLICHOPUS DORSALIS, new species.

Male.—Length 5.7 mm.; of wing 5.5 mm. Face rather wide, narrowed a little below, silvery white. Front green, with white pollen along the orbits. First antennal joint yellow, second mostly yellow, but blackened at tip; third wholly black, about as long as wide, somewhat orbicular in outline, still a little pointed at tip. Lateral and inferior orbital cilia yellowish white, about five of upper cilia black.

Thorax green, dorsum with a narrow median and wide lateral coppery vittae, considerably dulled with thick yellowish gray pollen. Abdomen green with coppery reflections; white pollen on its sides abundant and extending over the dorsum. Hypopygium black; its lamellae large, somewhat triangular in outline, but with the upper corner rounded, whitish with a moderately wide black border on the apical margin, which is jagged and bristly, more deeply so at lower corner.

Fore coxae wholly yellow, their anterior surface covered with white pollen and minute black hairs, which are mixed with delicate yellow ones on outer half. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter bare below. Posterior tibiae a little infuscated on inner side at tip; the usual glabrous stripe on upper surface between the two rows of large bristles distinct but somewhat broken by a few little hairs. Middle tibiae with three bristles below, a pair at apical third and one at basal third; they have three quite distinct glabrous spots on upper side. Fore tarsi a little longer than their tibiae, yellow, a little infuscated toward the tip, fifth joint almost black; first joint a little longer than the following two taken together, second half as long as first, third and fifth of about equal length, fourth a little shorter. Middle tarsi black from the tip of first joint, which is brownish; it has a large bristle on upper surface beyond its middle. Hind tarsi missing in the type, but no doubt they would be wholly black as in other species with blackened tips to the tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 111) grayish, slightly tinged with brown in front of second vein and narrowly along the fourth and cross veins; costa a very little thickened from before the tip of the first vein, gradually tapering to its tip; last section of fourth vein a little bent near its basal third, being about as far from the cross-vein as the length of that vein; hind margin of wing a little indented at tip of fifth vein; wing narrowing from a little beyond the tip of fifth vein to the anal angle, which is still rather prominent as the hind margin does not round off to the root of the wing.

Described from 1 male taken on rocks by the side of a stream on the White Mountains, New Mexico, at Rio Ruidoso, at 6,500 feet elevation (Townsend).

Type.—Male, Cat. No. 23029, U.S.N.M.

No. 112. DOLICHOPUS ABRASUS, new species.

Male.—Length 4.5 mm.; of wing the same. Face rather wide and long, silvery white. Front shining green. Antennae yellow, third joint with apical half brown, a little longer than wide, obtusely pointed at tip. Palpi yellow. Lateral and inferior orbital cilia white, about eight of the upper cilia on each side black.

Thorax shining green with brassy reflections and yellowish gray pollen on the dorsum, which does not dull it much, the bristles inserted in little black dots; pleurae dulled with white pollen. Abdomen green with conspicuous coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 112) large, oval, nearly twice as long as wide, whitish with a black border on apical and part of upper margin, jagged and bristly at apex, fringed with delicate hairs above.

All coxae yellow; fore coxae almost glabrous on the front surface, still with a few very delicate yellow hairs. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter glabrous below. Posterior tibiae but little thickened, blackened on their apical half, the black shading into the yellow; the usual glabrous stripe on upper surface appears as a yellowish stripe between the rows of large bristles, it does not quite reach the base or tip. Fore tarsi about one and a fourth times as long as their tibiae, somewhat infuscated from their base, but only the fifth joint black; first joint as long as the three following joints taken together, fourth about two-thirds as long as third, fifth fully as long as fourth and a little wider, being slightly enlarged. Middle tarsi infuscated from their base, especially below. Hind tarsi black; first joint rather slender for a *Dolichopus* and with two large bristles on upper surface. Calypters and halteres yellow, the former with black cilia.

Wings grayish, more yellowish brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle not being very much developed.

Described from 1 male which I took on Grand Island, Erie County, New York, August 17, 1913.

Type.—Male, Cat. No. 23030, U.S.N.M.

No. 113. DOLICHOPUS MARGINATUS Aldrich.

Dolichopus marginatus Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 17.—Melander and Brues, Biol. Bull., vol. 1, 1900, pp. 135 and 148.

Male.—Length 5.5–6 mm.; of wing 4.2–5 mm. Face rather wide, white, sometimes more grayish. Front violet with a narrow green edge above the antennae and along the orbits. First and second antennal joints yellow, usually with the upper edge very narrowly black; third joint black with the base or even half yellow, somewhat conical in outline, but little longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia pale yellow; about seven of the upper cilia on each side black.

Thorax shining green with bronze reflections, which often form a median vitta on the dorsum; pleurae dulled with white pollen. Abdomen green with coppery reflections on the hind margins of the segments. Hypopygium black; its lamellae (fig. 113) rather large, somewhat orbicular in outline, white with a rather wide, sharply defined black border on apical margin, jagged and bristly at lower apical corner, otherwise fringed on apical and upper margins with very long curved black hairs.

Fore coxae yellow with a blackish spot at base on outer side, anterior surface with black hairs except at upper outer corner, where the hairs are yellow. Middle and hind coxae yellow on inner side and at tip, black on outer surface for two-thirds their length. Femora and tibae yellow. Middle and hind femora each with one large preapical bristle, the latter ciliated on lower inner edge with long black hairs, the longest of which are longer than the width of the femora. Posterior tibiae slightly thickened, infuscated at tip on inner side for one-fourth their length and with a brown line on inner surface from near their base to the middle, sometimes almost uniting with the blackish color at tip, the glabrous stripe on upper surface broad and conspicuous, a little broken before the tip by a few little hairs. Fore and middle tarsi a little longer than their tibiae, darkened toward their tips. Fore tarsi with the last two joints black; first joint about as long as the following three taken together; fifth fully as long as the fourth, and with a point projecting over the claws, which terminates in several hairs, still the joint is scarcely compressed. Hind tarsi one and one-fourth times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein bent before its middle, its tip widely separated from the tip of the third vein, which bends backward a little; hind margin of wing a little indented at tip of fifth vein, rather regularly rounded, the anal angle being rounded, but moderately prominent.

Female.—Face broad, grayish white; tarsi a little darker than in the male; hind tibiae less blackened at tip and without the brown line on inner surface which is found in the male; hind femora not ciliated; costa not enlarged at tip of first vein; otherwise about as in the male. Middle tibiae with three bristles below, two at apical third and one near basal third, their basitarsi without a bristle above.

Redescribed from the twotype specimens in J. M. Aldrich's collection, which were taken in Connecticut, and from 5 males and 5 females; 2 males and 3 females were taken at New Bedford, Massachusetts; 1 pair at Woods Hole, Massachusetts, July 2, 1899; 1 female at Ipswich, Massachusetts, July 29, 1909; and 2 males on Long Island, New York, July. [Chesapeake Beach, Maryland, at edge of salt water, September 8, 1920.—J. M. A.]

Types.—In the University of Kansas collection and in that of J. M. Aldrich.

No. 114. DOLICHOPUS REFLECTUS Aldrich.

Dolichopus reflectus ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 12.

Male.—Length 5 mm.; of wing 4.5–4.8 mm. Face moderately wide, slightly narrowed below, white. Front green with more or less blue or violet reflections. Antennae yellow; third joint darker or brownish, a little longer than wide, somewhat conical in outline, rather rounded at tip; palpi dark yellow. Lateral and inferior cilia yellow, about seven of the upper cilia on each side black.

Thorax green with bronze reflections, which usually form a median vitta on the dorsum, the anterior edge of which is dulled with grayish pollen, posterior portion and scutellum usually with blue reflections; pleurae dulled with white pollen. Abdomen green with bronze reflections, sometimes more bronze-brown with green reflections; the white pollen on its sides abundant and reaching upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, but rounded at apex, whitish with a moderately wide black border on apical margin, which is jagged and bristly on its lower half, and fringed with delicate hairs on upper half.

Fore coxae yellow, their anterior surface covered with little black hairs. Middle and hind coxae black on outer side, yellow on inner surface and at tip. Femora and tibae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with long stiff black hairs on lower inner edge, these hairs inserted at nearly equal distances, but rather far apart, the longest hairs longer than the width of the femora. Posterior tibiae a little thickened, black at tip for one-fifth their length, their inner surface with a wide apparently glabrous stripe, which is narrowed apically, and is in reality covered with very minute black hairs. Fore and middle tarsi about one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, which is about equal to the two following joints taken together, fourth and fifth joints of nearly equal length. Hind tarsi one and a third times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 114) grayish; costa with a very slight enlargement at tip of first vein; last section of fourth vein sharply bent at nearly a right angle near its middle and with a stump of a vein at the posterior or first bend; hind margin of wing a little indented at tip of fifth vein; anal angle rather prominent but rounded.

Female.—Face wide, more grayish than in the male; third antennal joint about as long as wide; hind femora with a row of stiff black hairs on lower inner edge, the longest of which are about one-fifth as long as the width of the femora and might almost be called cilia; hind tibiae without the apparently glabrous stripe on inner surface; costa without an enlargement; otherwise about as in the male. Middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi without a bristle above.

Redescribed from 1 female from the type material; it was taken at Philadelphia, Pennsylvania, May 30; also from 1 female from Lawrence, Kansas; 1 female and 2 males from Columbus, Ohio, May 10; 1 male taken at Buffalo, New York, June 24; 1 male at Boonton, New Jersey, June 2; 2 males at Lafayette, Indiana, June 4; 2 males at Algonquin, Illinois; 1 male taken at Jacksonville, Florida, by Mrs. Slosson; 1 male from Plummer's Island, Maryland, June 5, by W. V. Warner; and 2 males taken at Washington, District of Columbia, August 13, 1917, by A. L. Melander.

No. 115. DOLICHOPUS ALBICOXA Aldrich.

Dolichopus albicoxa Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 10, pl. 1, fig. 13.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 4–4.5 mm.; of wing 4 mm. Face rather wide, silvery white. Front shining green. Antennae black; first joint yellow on the lower edge; third joint scarcely longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia whitish. Palpi yellow.

Thorax dark shining green, sometimes with coppery reflections; these may form two narrow vittae along the center of the dorsum with a slender shining green line between them; the dorsum is distinctly dusted with white pollen. Abdomen shining green, sometimes with slight bronze reflections, and with spots of white pollen on the sides of the segments. Hypopygium black; its lamellae large, somewhat oval in outline, white with a rather narrow black border on the apical margin, which is jagged and bristly, upper edge fringed with black hairs, lower edge with a few pale ones.

Fore coxae pale yellow; their anterior surface covered with abundant silvery white pollen and appears bare, still they have numerous, very minute, white hairs, and the usual black bristles at tip. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, their lower half having only very minute yellow hairs. Posterior tibia a little infuscated at tip, especially on inner side, where it is sometimes infuscated for one-third its length and in other specimens only a little, still always distinctly blackened on inner side. Fore tarsi (fig. 115*a*) nearly one and a half times as long as their tibiae; first joint about two-thirds as long as the tibiae; third and fourth each a little more than half as long as the joint preceding it; first three joints slender, yellow, last two black, compressed; fourth small, somewhat triangular, about as wide at apex as long; fifth wider than the fourth, somewhat oval in outline, about equal to the third in length, fringed with minute recumbent hairs on upper edge. Calypters, their cilia, and the halteres yellow.

Wings (fig. 115) grayish, more or less tinged with brown in front of third vein; costa scarcely at all enlarged at tip of first vein; last section of fourth vein a little bent before its middle; third vein bent backward a little so as to converge with fourth toward their tips; hind margin of wing a little indented at tip of fifth vein; anal angle nearly obsolete, the wing being narrowed at base.

Female.—Face wide, silvery white; third antennal joint nearly round with a notch above at tip, the arista inserted at upper corner of this notch; fore tarsi infuscated almost to their base, third and fifth joints of nearly equal length, fourth a little shorter, fifth a very little widened; middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi with a large bristle above; in the male the middle tibiae have three bristles, as in the female, except that the one at basal third is small; in some females the basitarsi do not have the bristle above, but it may have been broken off; fore coxae less silvery than in the male and with conspicuous little black hairs on their anterior surface, except on the outer edge, where there are some very minute white ones; wings about as in the male, except that the anal angle is a little more prominent. Cilia of calypters more or less blackish, usually the yellow predominating.

Redescribed from many males and females. The Aldrich collection contains specimens from New Hampshire, taken by Mrs. Slosson; Algonquin, Illinois, taken by Dr. W. A. Nason; Polk County, Wisconsin, July, taken by Baker; and Lafayette, Indiana, taken June 4–18, 1915, by J. M. Aldrich. I have taken it at Buffalo, New York, June 12, 1910; Gowanda, New York, June 15, 1913; Portage, New York, July 1, 1917; Ridgeway, Ontario, July 15, 1917; Fort Erie, Ontario, July 4, 1910; Chatham, Ontario, June 17, 1915; Bond Lake, Ontario, July 16, 1918. H. S. Parish took it at Waubamic, Ontario, June 14, 1915. A. L. Melander took it at Lynden, Vermont, June 13, 1914. In the United States National Museum are specimens taken at the White Mountains, New Hampshire, by Morrison; at Bristol, Rhode Island, June, 1878; and Beverly, Massachusetts, June.

Type localities.—Massachusetts and Connecticut. Aldrich reports it from Michigan. Johnson, Insects of New Jersey, 1909, reports it from Clementon, May 30; Anglesea, May 28; Burlington and Ocean Counties, May.

Type.—In University of Kansas. The females of *albicoxa*, *variabilis*, and *socius* differ as follows: *Socius* has no bristle on the middle basitarsi, which is usually, if not always, found in the others, and the posterior tibiae have sharply defined black tips; in *variabilis* these tibiae are wholly yellow, while in *albicoxa* they are blackened a little, especially on inner side, but the blackish color shades into the yellow. In *albicoxa* the third and fourth veins of the wing are distinctly convergent, their tips being rather close together; in *variabilis* the tips are widely separated, but the third vein bends back a little at tip; while in *socius* the third and fourth veins are nearly parallel at tip, the third being nearly straight.

No. 116. DOLICHOPUS PILATUS, new species.

Male.—Length 5.7 mm.; of wing 5 mm. Face wide, grayish white. Front greenish, or bronze-brown with green reflections. Antennae (fig. 116) black; first joint yellow below; third moderately large, a little longer than wide, somewhat rounded at tip; arista, a little longer than the antennae with an enlarged, somewhat spear-shaped tip, which forms more than one-third of its length. Lateral and inferior orbital cilia yellowish, about seven of the upper cilia on each side black.

Thorax greenish, or bronze-brown with green and coppery reflections; dorsum a little dulled with gray pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae rather large, somewhat elliptical in outline, but narrowed at base, about twice as long as wide, yellowish white with a broad black border on apical, and narrow border on upper margin, jagged and bristly at apex, fringed with black hairs above.

Fore coxae yellow, blackened at tip for nearly one half their length, their anterior surface covered with coarse black hairs. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge for one-third their length with yellow hairs, the longest of which is a little shorter than the width of the femora. Posterior tibiae thickened, especially at tip, black at tip for more than one fourth their length; the glabrous stripe on upper edge distinct, their inner surface nearly glabrous on its basal two-thirds; on the lower outer edge there is a row of about six, regularly placed bristles of nearly equal length, which are about as long as the thickness of the tibia. Fore tarsi (fig. 116*a*) one and a third times as long as their tibiae; second joint about three-fourths as long as the first, third shorter than the second, fourth short, slightly compressed, about as long as wide; first three joints yellow, fourth yellow with brownish tip, fifth black, much compressed, not as long as third, somewhat triangular, about as wide near the tip as long. Middle tarsi black from the tip of the first joint, which has several small bristles on its sides and below, and one small bristle above. Middle tibiae with three large bristles on lower anterior surface and two on lower posterior edge, sometimes one of these seems to be missing. Hind tarsi wholly black. Calypters and halteres yellow, the former with yellow cilia which sometimes appear to be almost black in certain lights.

Wings grayish; costa with a slight elongated enlargement at tip of first vein; last section of fourth vein bent near basal third; third vein bent backward at tip, but the tips of third and fourth rather widely separated; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent but rounded.

Female.—Face a little wider than in the male; antennae as in the male except that the arista is plain, still it has a small but distinct thickening at its middle; fore tarsi plain, one and a third times as long as their tibiae, infuscated toward their tips, but only the fifth joint black, first joint as long as the three following taken together, fourth scarcely as long as fifth; hind femora without cilia below, their tibiae but little thickened, blackened a little at tip, not glabrous on inner surface, with the row of bristles on lower outer edge larger and less regularly inserted than in the male; middle basitarsi with a large bristle above; cilia of the calypteres black, still somewhat yellowish in certain lights; wings more tinged with brown; costa not thickened at tip of first vein.

Described from 2 males and 1 female taken at Nain, Labrador, August 18.

The formation of the fore tarsi and the costal enlargement are very much like that of *splendidus* Loew.

Type and allotype.—In the collection of the Boston Society of Natural History.

No. 117. DOLICHOPUS PORPHYROPS, new species.

Male.—Length, 4.5–5 mm.; of wing the same. Face moderately wide, silvery white, but slightly tinged with yellow. Front violet with a narrow edge of green in front and along the orbits. Antennae (fig. 117*a*) black; first joint with the lower half yellow; third joint large, nearly three times as long as wide, pointed at tip, arista inserted near apical third, longer than the antennae. Lateral and inferior orbital cilia whitish; about six of the upper cilia on each side black.

Thorax green, with three bright coppery vittae on the dorsum, the median one sharply defined, the lateral ones just above the pleural suture, wide and not so distinctly limited, extending from the front to the root of the wing; anterior portion of the dorsum somewhat dulled with brownish gray pollen; pleurae with silvery white pollen. Abdomen green with coppery reflections, which are more conspicuous on the hind margins of the segments; the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 117*b*) rather large, somewhat quadrilateral in outline, a little longer than wide, white, with a black border, which is wide on apical, narrow on upper margin, jagged and bristly at apex, fringed above with dark, below with pale hairs.

Fore coxae yellow, inner half of front surface with little black hairs, inner half with minute pale ones. Middle coxae black on the outer surface, with yellow tips. Hind coxae almost wholly yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below. Posterior tibiae very little thicker than the others, blackened at tip, but the black shading into the yellow. Fore tarsi (nearly like fig. 116*a*) about one and a half times as long as their tibiae; first four joints yellow, fifth black; first three joints slender, fourth short, somewhat triangular, not much longer than the width of apical end; fifth joint much compressed and widened, somewhat triangular, nearly as wide at apex as long, truncate at tip, about three times as long as the fourth joint and about equal to the third in length. Middle tarsi longer than their tibiae, black from the tip of the first joint, which has a large bristle at apical fourth on upper surface. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 117) tinged with brownish; costa not enlarged at tip of first vein; last section of fourth vein rather sharply bent before its middle, sometimes with a little stump of a vein at the bend; hind margin of wing scarcely indented at tip of fifth vein, rather broadly rounded, the anal angle not being much developed.

Female.—Face wide; third antennal joint (fig. 117*c*) only a little longer than wide, oval, but a little pointed at tip; fore tarsi plain, first three joints yellow, last two black (sometimes only the first) and basal half of second joint is yellow, fifth joint slightly longer and broader than fourth; middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi with a large bristle near apical third; wings about as in the male.

Described from many males and females from the following locations: Woods Hole, Massachusetts; Kiamesha, New York; Adirondack Mountains, Axton, New York, June 17; Lynden, Vermont, June 13, 1914, taken by A. L. Melander; Center Harbor, New Hampshire, June 25, taken by H. G. Dyar; and the following that were taken by C. W. Johnson: At Mount Washington, New Hampshire, July 16–28, 1915, at 2,000 feet elevation; Glen House, New Hampshire, July 20–26; Hanover, New Hampshire, July 6; Dummerston, Vermont, July 14, 1908; South West Harbor, Maine, July 13, 1908; and Machias, Maine, July 22, 1909.

Type.—Male, Cat. No. 23031, U.S.N.M., from Center Harbor, New Hampshire.

No. 118. DOLICHOPUS JUGALIS Tucker.

Dolichopus jugalis Tucker, Trans. Kansas Acad. of Sci., vol. 23, 1911, p. 160.

The following is a copy of the original description:

Colorado, Tabernash, 8,310 feet, western side of the continental divide of the Rocky Mountains, 89 miles west of Denver, August, 1906. Type: One male specimen.

General color shining green. Femora and other joints of the legs except as specified, yellow; cilia of inferior orbit pale; tegulae with black cilia, fourth vein deflected, running somewhat forward at tip.

Closely allied to *coloradensis* Aldrich, from which it differs in the following particulars: The first joint of the antennae is yellow only on the under side; face subopaque black, with comparatively coarse facets; front with a bronze reflection; thorax with a distinct median stripe of bronze. Fore coxae yellow, touched with black at base, and transversely marked on the front side with a preapical black line bordered by a row of fine black bristles, the two outer bristles are equally long, but inwardly the bristles are much reduced in size, and all are set behind the line. Fore tarsi two-thirds longer than their tibiae; first three joints extremely slender; the second scarcely longer than the first, the third less than two-thirds the length of the second, fourth and fifth together equal in length to the third, black and enlarged to all appearances the same as with *coloradensis*, unless more symmetrically equal on each side of the axial line. Lamellae of the hypopygium more than twice as long as wide, the tips touching posterior coxae. Costa of wing slightly thickened at junction of first vein. The posterior margin of scutellum is slightly tinged with yellow. In other respects, the tarsi of middle legs are strongly black from the tip of the first joint;

the posterior tibiae are infuscated at apex, their tarsi black; the middle and posterior tibiae bear two rows of long, stout, black bristles behind, and a few similar bristles are attached in front. On each of the middle and posterior femora a single bristle is situated at some distance before the apex. Fore coxae clothed with fine black hairs on the front surface in addition to the row of bristles. Palpi and halteres yellow. Length 5.5 mm.; wing 5 mm.

I have not seen the species.

Location of type not known. Hunter does not include it in his list of types in the University of Kansas, 1913.

No. 119. DOLICHOPUS PLUMITARSIS Fallén.

Dolichopus plumitarsis FALLÉN, Dolichopodes, 1823, p. 10.—ZETTERSTEDT, Dipt. Scand., vol. 2, 1843, p. 556.—SCHINER, Fauna Austr., vol. 1, p. 216.—COQUILLETT, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 425.

Male.—Length 5 mm.; of wing 5.5 mm. Face rather narrow, silvery white. Front green with white pollen, antennae black; first joint broadly yellow below; third joint one and a half times as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia white, about five of the upper cilia on each side black. Proboscis and palpi yellow.

Thorax green; dorsum with bronze reflections and a little gray pollen on the front portion; pleurae dulled with white pollen. Abdomen green; the white pollen on its sides not very abundant. Hypopygium black; its lamellae of moderate size, oval, white with a rather narrow black border, jagged and bristly on apical margin, fringed above with little black hairs.

Coxae, femora, and tibiae yellow. Middle and hind coxae largely blackened on outer surface; fore coxae wholly yellow, their anterior surface covered with minute yellow hairs. Middle and hind femora each with one preapical bristle, the hind ciliated with 8 or 10 long whitish hairs on the apical half of the lower inner edge, the longest hairs being as long as the width of the femora. Middle tibiae with three large bristles below, two near apical and one near basal third, their basitarsi with one large bristle above near apical third, and several small ones on the sides and lower surface. Posterior tibiae thickened, black at tip for one-fifth their length; the usual glabrous stripe on upper surface distinct, inner surface glabrous for their whole length on upper part, broadly except toward the tip. Fore tarsi (fig. 119) about one and three-fourths as long as their tibiae; first three joints yellow, last two black; second joint two-thirds as long as first, third three-fourths as long as second and a very little widened at tip; fourth and fifth compressed and fringed above with little black hairs, taken together about as long as second, fifth smaller and shorter than fourth, oval, fourth somewhat triangular, widest at tip. Middle tarsi one and one-fourth times as long as their tibiae, blackened from the tip of the first joint. Hind tarsi wholly black.

Calypters and halteres yellow, the former with black cilia, still they appear yellowish in certain lights.

Wings grayish; costa without an enlargement at tip of first vein; last section of fourth vein bent at its middle; third vein very nearly parallel with fourth beyond the bend in fourth and widely separated from it; hind margin of wing not indented at tip of fifth vein, evenly rounded, the anal angle not at all prominent.

Female.—Wings, coxae, and bristles of middle tibiae and basitarsi as in the male. Face wide, white; third antennal joint smaller; fore tarsi plain, a little longer than their tibiae, brownish from the base, but only the fifth joint black, second joint a little more than half as long as first, third a little shorter than second, fourth and fifth together as long as second, fourth a little longer than fifth; middle tarsi as long as their tibiae; hind femora without cilia below; posteria tibiae only a little thickened and a little blackened at tip, but they could not be said to be black at tip; calypteres with black cilia.

Redescribed from 1 male taken at Kukak Bay, Alaska, July 4, and 1 female from Europe.

Type.—In the University of Lund, Sweden.

No. 120. DOLICHOPUS POLLEX Osten Sacken.

Dolichopus pollex OSTEN SACKEN, Western Diptera, 1877, p. 314.

Male.—Length 4.7–6 mm.; of wing 4.2 mm. Face wide, a little narrowed below, silvery gray, tinged with yellow. Front reddish coppery, sometimes edged with green. Antennae wholly black, third joint but little longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish, about eight of the upper cilia on each side black.

Thorax green with reddish coppery reflections on the dorsum, sometimes mostly coppery, at others with three narrow coppery vittae; not very shining; pleurae dulled with white pollen. Abdomen green with coppery reflections, which are most conspicuous on the apical segments, somewhat dulled with white pollen. Hypopygium black; its lamellae rather large, nearly one and a half times as long as wide, oval, whitish, sometimes tinged with brownish yellow, with a black border on upper and apical margins, a little jagged and bristly on apical margin, especially at lower corner, fringed above with black hairs.

All coxae black; fore and middle pairs with yellow tips, their anterior surface covered with little black hairs. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with black hairs, the longest of which are nearly as long as the width of the femora. Posterior tibiae blackened at tip for more than one-fourth their length, a little thickened, their bristles large with about eight in a row; the glabrous stripe between these bristles narrow, inner side glabrous on basal half and with a glabrous line inside of the inner row of bristles extending to their tips. Fore tarsi (fig. 120*a*) about one and a third times as long as their tibiae; first joint yellow with a black tip, a little less than half as long as the tibia; second and third joints whitish with black tips, the two taken together about three-fourths as long as the first; fourth black, compressed, as wide at tip as it is long, as long as third, fifth joint much compressed, black, divided into two lobes which are truncate at their tips, the lower lobe being the fifth joint and bearing at lower apical corner the small claws and white pulvilli, the upper lobe arising from the base of the lower and a little longer, wider at tip than in the middle. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint, which has a large bristle above near apical third. Hind tarsi wholly black. Calypters and halteres yellow, the former with abundant black cilia.

Wings (fig. 120) dark grayish; costa with a small enlargement at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent, the wing being of somewhat equal width.

Female.—A female apparently belonging to this species has the face wider; the hind femora without cilia, hind tibiae not glabrous on inner side, fore tarsi plain, longer than their tibiae, dark yellow, becoming infuscated from near the base, last three joints black. The middle basitarsi has the conspicuous bristle at apical third that is found in the male, their tibiae with three bristles below, one pair at apical third and one bristle near basal third.

Redescribed from 4 males and 1 female. Two males were taken at Cathedral Lake, Tahoe, California, July 6, by E. P. Van Duzee; 2 males taken in the Yosemite Valley, California, May 22, by E. T. Cresson, jr. The female was taken in Emigration Canyon, Utah, July 21.

Type locality.—Cathedral Lake, Sierra Nevada, California, July.

Type.—In the collection of the California Academy of Sciences.

No. 121. DOLICHOPUS OBCORDATUS Aldrich.

Dolichopus obcordatus ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 14, pl. 1, fig. 24.

Male.—Length 3.7–5.3 mm.; of wing 3–5 mm. Face wide, only a little narrowed below, covered with coarse ocher-yellow or yellowish gray pollen, often almost golden yellow. Front bronze or coppery with green margins, shining. Antennae wholly black; third joint rather large, longer than wide, somewhat conical in outline. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax green with coppery reflections on the dorsum, which sometimes form a distinct median vitta; dorsum slightly dulled with an almost invisible gray pollen, more conspicuous along the front; pleurae dulled with a little white pollen. Abdomen green with bronze reflections; the white pollen on its sides extending upon the dorsum. Hypopygium black: its lamellae (fig. 121) of moderate size, oval, whitish, with a black border on apical and upper margins, a little jagged and bristly at apex, fringed above with short black hairs.

Coxae black with yellow tips; fore coxae with white pollen and little black hairs on their anterior surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge for nearly their whole length with black hairs, which appear brown in certain lights, the longest of these hairs scarcely as long as the width of the femora. Posterior tibiae black at tip for nearly one-fourth their length, a little thickened; the glabrous stripe on upper surface distinct, inner surface glabrous on basal half and with a narrow glabrous line just inside of inner row of bristles on apical half. Fore tarsi (fig. 121*a*) about one and a half times as long as their tibiae, the first three joints yellow, slender, of decreasing length, the first being as long as the two following taken together; last two joints black, compressed, fourth about three-fourths as long as third, not as wide at apex as long, fifth joint much widened, notched at apex, somewhat cordate, the lobes being of nearly equal size; a little longer than third joint and nearly as wide over the two lobes at tip as the length of the third joint. Middle tarsi about one and a third times as long as their tibiae, black from the tip of the first joint, which has a large bristle above near apical fourth. Hind tarsi wholly black, about one and a half times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa enlarged at tip of first vein, tapering to its tip; last section of fourth vein considerably bent before its middle, sometimes this bend bears a slight stump-vein; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent.

Female.—Face a little wider than in the male and more whitish; hind femora not ciliated; their tibiae not glabrous on inner surface; fore tarsi plain, as long as their tibiae, black from the tip of the first joint; middle tarsi a little longer than their tibiae, bristle on first joint placed at apical third; their tibiae with three bristles below, one pair at apical third and one bristle at basal third.

Redescribed from numerous males and females. Idaho, taken July to October (Aldrich); Utah, July; Colorado Springs, Colorado, June 9; Washington, May to July (Melander); Yellowstone Lake, Montana, July 9; Sheridan, Wyoming, June; Hood River, Oregon, June to September (Cole); Tallac Lake, Tahoe, California, June 25; Nelson, British Columbia, July 17.

Type localities.—Wyoming and Manitou, Colorado.

Type.—In University of Kansas.

No. 122. DOLICHOPUS PERNIX Melander and Brues.

Dolichopus pernix MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 141, fig.

Male.—Length 4.5–4.75 mm.; of wing 4–4.5 mm. Face moderately wide, narrower on lower half, white, more or less tinged with yellow, especially on upper portion. Front shining green. Antennae wholly black; first joint slightly brownish below; third joint longer than broad, oval, still rather pointed at tip. Palpi yellow with black hairs. Lateral and inferior orbital cilia yellowish, from five to eight of the upper cilia on each side black.

Thorax green with more or less bronze or coppery reflections; dorsum somewhat dulled with almost invisible gray pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections near the hind margins of the segments, incisures narrowly black, the white pollen on its sides extending upon the dorsum so as to leave the central line blackish. Hypopygium black; its lamellae (fig 122*a*) of moderate size, somewhat elongate-oval in outline, still quite pointed at tip, twice as long as wide, yellowish white, narrowly brown at apex, with one or two long branched bristles at tip, fringed above with small brown hairs, below and on the disk with delicate yellow hairs.

Fore coxae yellow with a black spot at base on outer side, their anterior surface with little black hairs and a few minute yellow ones near outer edge. Outer surface of middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below. Posterior tibiae a little thickened, black at tip for nearly one-fifth their length, this black sharply defined; the usual glabrous stripe on upper surface although broad does not reach the base and is somewhat broken by a few little black hairs; (Melander and Brues in the original description write "hind tibiae not glabrous internally," but in all the specimens before me the upper half of the inner surface is glabrous, beginning near the base where it is wide and contains a brown streak in most specimens; probably the word "not" in the original description should have been omitted).

Fore tarsi (fig. 122*b*) one and a half times as long as their tibiae, first joint two-thirds as long as the tibiae, third joint only slightly shorter than the second, taken together they are a little longer than first; first three joints yellow; fourth and fifth black, a little compressed and expanded, of nearly equal length, the two taken together about as long as second. Middle tarsi one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, still the base of second yellowish. Hind tarsi deep black, about one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 122) grayish; costa scarcely enlarged at tip of first vein; last section of fourth vein bent at its second fifth; third vein bent backward at tip, still nearly parallel with fourth at extreme tip; hind margin of wing not indented at tip of fifth vein, slightly sinuated from tip of fifth to anal angle, which is prominent; wing of somewhat equal width.

Redescribed from 6 males in the collection of J. M. Aldrich, 1 taken at Keyport, Washington, August 7, 1905, the others at Seattle, Washington, and 2 males taken by A. L. Melander, in British Columbia, 1 at Abbotsford, August 9, and the other at Langley, August 9.

Type.—In American Museum of Natural History, New York, from Vancouver Island.

No. 123. DOLICHOPUS BLANDUS, new species.

Male.—Length 4.5–5.8 mm.; of wing 4–4.5 mm. Face moderately wide, narrower below, pale golden yellow. Front shining green, sometimes brassy green. First antennal joint wholly yellow or with a very narrow black line on upper edge, rather short; second and third joints black, taken together somewhat orbicular in outline, third rounded at tip; arista inserted near the base of the third joint, about twice as long as the antennae. Lateral and inferior orbital cilia pale yellow, about eight of the upper cilia black.

Thorax green with brassy reflections, dulled with gray pollen along the front edge of the dorsum; pleurae dulled with white pollen. Abdomen green with coppery reflections and narrow black incisures; the white pollen on its sides extends upon the dorsum. Hypopygium black; its lamellae (fig. 123*a*) large, twice as long as wide, somewhat oval in outline but narrowing into the stem, whitish, with the apical margin broadly, and the upper narrowly black, jagged and bristly on lower apical corner, otherwise the apical and upper edges are fringed with rather short brown hairs; lower edge with a few pale hairs.

Fore coxae yellow with a black spot at base on outer side, anterior surface with little black hairs; middle and hind coxae black with narrow yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the little black hairs on the sides reaching the lower edge. Posterior tibiae scarcely thickened, their apical half black, shading into the yellow, sometimes the yellow extends farther toward the tip on the lower edge; the glabrous stripe on upper edge distinct and reaching from near the base to their tips. Fore tarsi (fig. 123*b*) one and a half times as long as their tibiae; three first joints slender, yellow, sometimes the extreme tip of third blackened, second nearly three-fourths, third one-third as long as first; fourth and fifth joints black, compressed, fourth half as long as third, as wide as long, fifth much widened, as long as second, somewhat oval but narrowed toward the base and straight below, near the apex a little less than half as wide as long. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a bristle above. Hind tarsi one and a fourth times as long as their tibiae, wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 123) grayish, sometimes a little tinged with brown in front of third vein; costa a little thickened at tip of first vein, tapering from there to its tip; last section of fourth vein a little before its middle, its tip far before the apex of the wing; hind margin of wing scarcely indented at tip of fifth vein; wing of rather equal width, the anal angle being prominent.

Female.—Differs from the male in having the face broad with yellowish gray pollen; the fore tarsi are plain, a little longer than their tibiae, black from the tip of the first joint, which is about as long as the three following joints taken together; hind tibiae less blackened at tip; the wings are a little more tinged with brown; the costa is scarcely at all thicker at tip of first vein; posterior margin of wing a little more broadly rounded, the anal angle being a little less prominent.

Described from 5 males and 1 female. One male was taken at Emigration Canyon, Utah, July 27, 1917, and 1 pair at Tennessee Pass, Colorado, July 25, 1917, by J. M. Aldrich; 1 pair was taken by Baker in Colorado; 1 pair at Beaver Creek, Montana, in Aug., 1913, by S. J. Hunter, at an elevation of 6,300 feet; 1 male was taken by W. M. Mann, at Nigger Hill, Powell County, Montana, in July.

Type.—Male, Cat. No. 23032, U.S.N.M., from Tennessee Pass, Colorado.

No. 124. DOLICHOPUS VIGILANS Aldrich.

Dolichopus vigilans ALDRICH, Kansas Univ. Quart., vol. 2, p. 13, pl. 1 fig. 18.

Male.—Length 5.2–5.5 mm.; of wing 4.1–4.5 mm. Face rather wide, silvery white, tinged with yellow on upper half or more. Front violet with a narrow border of green above the antennae and along the orbits. Antennae yellow with the apical half of third joint black; third joint conical, about as long as wide; arista twice as long as the antennae. Proboscis black; palpi yellow. Lateral and inferior orbital cilia whitish, about six of the upper cilia on each side black.

Thorax green, scutellum and sometimes the dorsum with blue reflections, usually there is a coppery spot on the sides at the suture; anterior part of the dorsum a little dulled with grayish pollen which becomes more yellowish on the disk; pleurae dulled with white pollen. Abdomen green with the hind margins of the segments narrowly black and with bronze reflections; the white pollen on its sides forms large spots on each segment and extends upon the dorsum. Hypopygium black with green reflections; its lamellae moderately large, somewhat round in outline, but with the lower edge straight and the lower outer corner rather angulated, jagged and bristly, elsewhere the upper and outer margins are fringed with short black hairs and are narrowly black, the disk being white.

Fore coxae yellow, sometimes with a brown spot at base on outer side, anterior surface with conspicuous black hairs on inner half. Middle and hind coxae black on outer side, yellow on inner surface and at tip, the posterior ones sometimes mostly yellow. Femora and tibiae yellow. Middle and hind femora each with one bristle before the tip, the latter with yellow cilia on apical third of lower inner edge, the hairs being about one third as long as the width of the femora. Posterior tibiae thickened; their tips narrowly black; the glabrous stripe on upper surface distinct and extending from near the base to apical fourth where it is broken by a row of hairs; inside of the inner row of large bristles is a glabrous stripe extending their entire length but widest near the base. Fore tarsi (fig. 124*a*) about one and a half times as long as their tibiae; first two joints slender, yellow, second fully half as long as first, third about two-thirds as long as second, its apical half infuscated and a little widened; fourth and fifth joints black, compressed, fourth fully half as long as third, about as wide as long, fifth nearly as long as second, straight below, widened apically, the widest point at the claws, the upper corner extending beyond the claws, rather acute at tip; pulvilli white. Middle tarsi one and a fourth times as long as their tibiae, darkened from the tip of the first joint, the joints paler at base, tip black, basitarsi with a large bristle above at apical third. Hind tarsi wholly black, one and a half times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 124) grayish; costa with a slight knot-like enlargement at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing a little indented at tip of fifth vein; anal angle prominent, the wing being of somewhat equal width; hind margin a little sinuated.

Female.—Differs from the male in having the face wide with grayish pollen; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint; middle tibiae with three bristles below, one pair at apical third and one bristle at basal third; hind femora without cilia below; hind tibiae less thickened and without the glabrous stripe on inner surface; costa not enlarged at tip of first vein; wing a very little wider.

Redescribed from many specimens from the following localities: Toledo, Ohio; Lafayette, Indiana, June 20–July 4; Erie County, New York, June 18–August 8; Niagara County, New York, August 4; Fort Erie, Ontario, June 20–July 13; Black Creek, Ontario, July 24; Niagara Falls, Ontario, July 31.

Type locality.—Douglas County, Kansas, June 24.

Type.—In the collection of the University of Kansas.

No. 125. DOLICHOPUS FLAGELLITENENS Wheeler.

Dolichopus flagellitenens Wheeler, Psyche, vol. 5, 1890, p. 339.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 13, pl. 1, fig. 11.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 4.5–5.5 mm.; of wing 4.2–4.75 mm. Face moderately wide, pale golden yellow, sometimes more yellowish white. Front green, often with bronze reflections. First antennal joint yellow; second yellow on lower half, black above, sometimes only the upper edge black; third joint black, somewhat oval, a little longer than wide. Proboscis black; palpi yellow. Lateral and inferior orbital cilia yellow, about eight of the upper cilia on each side black. Thorax green, sometimes with coppery reflections, which often form a median vitta on the dorsum, the front and central portion of which has rather thick gray pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides forming spots on the lower edges of the segments. Hypopygium black; lamellae (fig. 125*a*) rather large, somewhat oval in outline, twice as long as wide, whitish with rather wide apical and narrow upper border of black, jagged and bristly at apex, fringed above with little black hairs and below with a few delicate yellow ones.

Fore coxae yellow, with the extreme base a little blackened, their anterior surface covered with black hairs. Middle and hind coxae black, with broad yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with the black hairs on the sides reaching the lower edge. Posterior tibiae thickened, their apical half black, still the yellow often extends to the tip on the lower surface; the glabrous stripe on upper surface distinct and reaches their entire length but is a little broken by a few hairs. Middle tibiae with four bristles on lower surface, one pair near apical third and two at equal distances toward their base. Fore tarsi (fig. 125*b*) nearly one and a third times as long as their tibiae, the first four joints taken together about equal to the tibia in length; second joint half as long as first and a little more slender; first three and most of fourth yellow, sometimes mostly black; third and fourth taken together but little more than half as long as second, fourth slightly shorter than third, as wide as long; fifth joint black, much compressed and widened, scarcely as long as the first but longer than the second, not quite as wide as long, somewhat oval in outline, fringed above with little black hairs; the white pulvilli quite conspicuous. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which has a large bristle on upper surface and a smaller one on the anterior upper edge. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 125) grayish, sometimes a little tinged with brown in front or along the veins; costa slightly enlarged at tip of first vein; last section of fourth vein a little bent beyond its basal third; third vein bent a little backward at tip; hind margin of wing a little indented at tip of fifth vein; wing rather narrow and of nearly equal width, the anal angle being prominent.

Female.—Face wide, grayish white; fore tarsi plain, usually with only the last joint black, fifth joint nearly twice as long as fourth, first longer than the three following joints taken together; hind tibiae scarcely at all thickened, its apical fifth black, but this black shading into the yellow, so they are sometimes infuscated almost from their middle; otherwise about as in the male.

Redescribed from several males and females from the following locations: Polk County, Wisconsin, July, taken by Baker; Brookings, South Dakota, June 16, taken by J. M. Aldrich; White Mountains, New Hampshire, taken by Morrison; Ottawa, Canada, July; I have taken it at East Aurora, New York, June 2, and at Ridgway, Ontario, July 15.

Type locality.—Milwaukee County, Wisconsin; Aldrich reports it from South Dakota and Colorado; Melander and Brues from Illinois.

No. 126. DOLICHOPUS BIFRACTUS Loew.

Dolichopus bifractus Loew, Neue Beitr., vol. 8, 1861, p. 19; Mon. N. Amer. Dipt., pt. 2, 1864, p. 53.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 12, pl. 1, fig. 14; Biologia Centrali-Americana, Dipt., vol. 1, 1901, p. 333.—Johnson, Insects of New Jersey, 1909, p. 757.

Male.—Length 4–5.5 mm.; of wing 4–5 mm. Face wide, white to yellowish gray, being quite variable in color. Front green, covered with yellowish gray pollen which often conceals the ground color. Antennae yellow; third joint brown at tip, longer than wide, conical, with a distinct swelling at the insertion of the arista, which is black. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax green with bronze reflections; dorsum covered with yellowish brown pollen with often conceals the ground color; pleurae with abundant white pollen. Abdomen green with bronze reflections; the pollen on its sides more gray than in most species and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, with the outer part rounded, whitish with a narrow black border on apical margin, jagged and bristly on the lower half of the rounded apical margin, upper half with delicate brown hairs, fringed on the lower edge, which is nearly straight, with a few delicate little pale hairs.

Fore coxae yellow, with little black hairs on inner half of anterior surface; these hairs sometimes cover the whole of the apical half and do not always reach the base of the coxae; middle coxae blackish on outer surface except at tip; hind coxae usually wholly yellow, sometimes a little blackened on outer surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below, except for a row of minute yellow hairs on lower inner edge. Posterior tibiae slightly thickened, blackened a little at tip, but sometimes only slightly so. Fore tarsi (fig. 126*a*) one and a fourth times as long as their tibiae, first three joints dark yellow, fourth and fifth black, a little compressed, upper edge of fifth fringed with stiff black hairs, fourth nearly as wide at tip as long, about half as long as fifth; first joint about as long as the three following taken together. Middle tarsi about one and a third times as long as their tibiae, black from the tip of the first joint, still the base of the second joint often yellowish, their basitarsi with a bristle above; middle tibiae with three bristles below, one pair at apical third and one bristle at basal third. Hind tarsi wholly black, one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 126) grayish, usually slightly brownish along the veins and sometimes in front; costa not thickened at tip of first vein; last section of fourth vein bent at right angles before its middle and with a stump of a vein; frequently the upper bend is also a right angle and may even have a stump; hind margin of wing a little indented at tip of fifth vein; anal angle prominent.

Female.—Face a little wider than in the male, antennae nearly wholly yellow; fore tarsi colored about as in the male, but the fourth and fifth joints are not compressed; otherwise about as in the male.

Redescribed from numerous males and females from the following locations: Custer, South Dakota; Brookings, South Dakota, June 12 (Aldrich); Lawrence and Baldwin, Kansas; Riley County, Kansas, Sept.; Lafayette, Indiana, June 6–Oct. 13; Fargo, North Dakota; Ohio; Woods Hole, Massachusetts; Hanover, New Hampshire; Ames, Iowa; western New York, June 13–Oct. 6; Chicago, Illinois; Fort Erie, Ridgeway, Toronto, Kearney, and Sudbury, Ontario, June 22–Aug. 8; Montreal, Quebec, June 15.

Type localities.—Chicago, Illinois, and Nebraska. Aldrich (in Biologia Cent. Amer.) reports it from Cuernavaca, Mexico, much farther south than any other true *Dolichopus* has been found; Johnson, Insects of New Jersey, reports it from Jamesburg, July 4, and Westville, Aug. 18.

No. 127. DOLICHOPUS PUGIL Loew.

Dolichopus pugil Loew, Centuries, vol. 8, No. 77.—Johnson, Insects of New Jersey, 1909, p. 756.

Dolichopus henshawi Wheeler, Psyche, vol. 5, 1890, p. 340.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 134.

Male.—Length 5–6 mm.; of wing 4.75–5 mm. Face moderately narrow, long, yellow. Front violet with a narrow edge of green along the orbits and above the antennae. Antennae yellow; first joint rather long, with bristly hairs on upper half; third joint a little longer than wide, somewhat conical in outline, pointed at tip, its apical half black; arista thick, longer than the antennae. Proboscis black; palpi yellow. Lateral and inferior orbital cilia yellow, ending in one black bristle at the proboscis, about six of the upper cilia on each side black.

Thorax green with coppery reflections, which usually form a median vitta on the dorsum, it often has blue reflections on the posterior portion and on the scutellum; a little dulled with grayish pollen along the front of the dorsum and with brownish pollen on the disk which is easily overlooked; pleurae dulled with white pollen. Abdomen green with green reflections; the white pollen on its sides extends upon the dorsum. Hypopygium black; its lamellae rather large, somewhat round in outline but narrowing into the stem, whitish with a narrow black border on the apical margin, jagged and bristly at lower corner, the rest of the apical margin fringed with long black bristly hairs, which are nearly as long as the width of the lamellae, lower edge with a few yellow hairs.

Fore coxae yellow, usually with a blackish spot at base on outer side, their anterior surface covered with conspicuous black hairs; middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with long black hairs, the longest of which are nearly one and a fourth times as long as the width of the femora, on basal fourth the hair become short and yellowish. Anterior tibiae (fig. 127*a*) a little enlarged and slightly infuscated at tip, where there are a few conspicuous flattened black hairs. Posterior tibiae a little thickened, blackened a little at tip on lower surface and on the sides, yellow to the tip on upper surface; on inner side there is a blackish streak extending toward the base from the black of the tip and also a blackish streak from the base to the middle, sometimes it reaches the tip. Fore tarsi (fig. 127*b*) one and a fourth times as long as their tibiae; first joint pale yellow with a black tip, nearly as long as the three following joints taken together; second and third of nearly equal length, wholly pale yellow; fourth about one-half as long and a little wider than third, pale yellow with the tip black; fifth joint as long as third, black, compressed and widened, nearly oval. Middle tarsi nearly as long as their tibiae, yellow with the tips of the first three joints and the whole of the last two black. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 127) broad, grayish, sometimes the veins are very slightly bordered with brownish; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein moderately bent a little before its middle; hind margin of wing a little indented at tip of fifth vein; anal angle prominent.

Female.—Face wide, grayish white; antennae about as in the male, but sometimes the first joint is black on upper edge of outer side; fore tarsi a little longer than their tibiae, yellow, becoming darker toward their tip, but only the last joint black, first four joints slightly darker at their tips, basitarsi nearly as long as the three following joints taken together, fourth joint two-thirds and fifth nearly as long as third; middle tarsi as in the male, except that the yellow at base of second and third joints is less conspicuous; hind tibiae only slightly brownish at tip and without the brown streaks on inner surface; hind margin of wing a little more evenly rounded than in the male, the anal angle being more rounded and the wing wider between the fifth and sixth veins.

Redescribed from 10 males and 2 females taken as follows: Woods Hole, Massachusetts; Horse Neck, Beach, Massachusetts (Hough); Cohasset, Massachusetts, July 22–September 8; Machias, Maine, July 17; Buffalo, New York, June 27.

Type locality.—Canada. Type locality for *henshawi* Wheeler is Massachusetts. Johnson, Insects of New Jersey, reports it from Cape May, June 23.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 128. DOLICHOPUS PLUMIPES Scopoli.

Musca plumipes Scopoli, Entomologia Carniolica, 1763, p. 334.

Dolichopus pennitarsis Fallen, Dolichopodes, 1823, p. 6.—Stannius, Isis, 1831, p. 63.—Zetterstedt, Dipt. Scand., vol. 2, p. 541, 1843.

Dolichopus plumipes Loew, Mon. N. A. Dipt., vol. 2, 1864, p. 60.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 13.—Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 423.—Lundbeck, Diptera Danica, vol. 4, 1913, p. 99.

Hygroceleuthus plumipes Melander and Brues, Biol. Bull., vol. 1, 1900, p. 127, fig. 3.

Male.—Length, 3.5–4.5 mm.; of wing 3.5–4 mm. Face rather narrow, long, reaching nearly to the lower corner of the eyes, pale yellow to ocher yellow. Front shining green. First two joints of the antennae yellow, third black, usually more or less yellow at base, nearly twice as long as wide, ovate but a little pointed at tip. Palpi yellow. Lateral and inferior orbital cilia yellow, a few of the upper cilia black.

Thorax green, sometimes with coppery or bronze reflections; pleurae dulled with white pollen. Abdomen green with white pollen on its sides. Hypopygium black with green reflections; its lamellae rather small, somewhat oval in outline, whitish, sometimes almost brown, with a narrow black margin, which is broadest at the apex and extends along both edges in some specimens, in others only along the upper edge, jagged and bristly on apical margin, especially at the lower corner, fringed above with little brown hairs.

Fore coxae yellow with little black hairs on the anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Middle tibiae a little longer than their femora, compressed, very slender except at base and tip, where they are nearly normal in size; usually with a blackish line on upper edge and when viewed from the side there often appears to be a median brown line extending nearly their whole length; their anterior side is covered with silvery pollen, and near the tip is a whitish ring, which sometimes only shows as a whitish spot on the front surface; extreme tips black. Posterior tibiae a little thickened, black at tip for a short distance; inside of the inner row of large bristles is a slender glabrous line extending nearly their whole length. Fore tarsi about one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, which is about as long as the three following joints taken together. Middle tarsi (fig. 128*a*) black, about three fourths as long as their tibiae, the first joint about as long as the two following joints taken together, a little thickened, fringed on both sides with black hairs which give it a broad, somewhat elongate-oval form. Hind tarsi wholly black, a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 128) grayish, sometimes tinged with brown; costa with a small knotlike enlargment at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, beyond which is a slight sinus that leaves a broad lobe at tip of sixth vein, the anal angle being very prominent.

Female.—Face wider, shorter and more gray than in the male; middle tibiae normal, their tips slightly enlarged, sometimes more conspicuously black than in the male, at others nearly yellow; middle tarsi normal, wholly black, about as long as their tibiae, first joint without a bristle above, their tibiae with one large bristle below;

costa scarcely enlarged at tip of first vein; hind margin of wing nearly straight; anal angle prominent.

Redescribed from many males and females from the following localities: Europe; Yakutat, Alaska, June 21 (Kincaid); Moscow, Idaho, June 14 (Aldrich); Sheridan, Wyoming, July (Metz); Monterey, California, July 13 (Wheeler); Washington several places, May 29–July 24; Yellowstone Park, North West Entrance, August 4; Colorado; Wells, Nevada, June 6; Erwin, South Dakota, June; Eastport, Maine, June 29.

Loew reports it from Quebec, Canada; Aldrich, South Dakota and Colorado; Melander and Brues from Colorado and Vancouver Island; Skinner from Beulah, New Mexico; Coquillett from Alaska, several places.

Location of type unknown; described from Europe.

No. 129. DOLICHOPUS DASYPODUS Coquillett.

Dolichopus dasypodus Coquillett, Canadian Entomologist, vol. 42, p. 42.

Male.—Length, 4 mm.; of wing, the same. Front moderately wide, pale yellowish. Front green, somewhat dulled with gray pollen; first antennal joint wholly yellow or with the upper edge very narrowly black; second and third joints black, taken together somewhat oval in outline, a little longer than wide; third obtusely pointed at tip. Lateral and inferior orbital cilia pale yellow, more white below, the black cilia descending about one-fourth the eye height.

Thorax green with bronze reflections, forming the beginnings of two narrow vittae on the front of the dorsum, which is dulled with white pollen, especially in front; pleurae dulled with white pollen. Abdomen green with slight bronze reflections and narrow black incisures; the white pollen on its sides conspicuous. Hypopygium black; its lamellae of moderate size, somewhat quadrangular in outline, whitish or yellowish with rather wide black border on apical and upper margins; jagged and bristly at apex, fringed above with stiff black hairs.

Fore coxae wholly yellow with silvery pollen and minute pale hairs on anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow; middle and hind femora each with one preapical bristle, the latter nearly bare below. Middle tibiae slightly enlarged at tip and with a somewhat opalescent, elongated spot at tip on upper surface; posterior pair with a brown or blackish spot on outer and inner side at tip; the glabrous stripe on upper surface conspicuous and extending their whole length. Fore tarsi one and a fourth times as long as their tibiae, black from the extreme tip of the first joint, their joints of regularly decreasing length. Middle tarsi only a little longer than their tibiae, wholly deep black, their basitarsi thickened about as those of the hind tarsi and with several bristles, two of the upper ones large. Hind tarsi wholly black, a little longer than the middle pair. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 129) grayish, slightly darker in front of the third vein; costa not enlarged at tip of first vein; last section of fourth vein bent a little beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle of wing very prominent, with a small lobe extending toward the base of the wing and making the wing of somewhat equal width; there is a shallow sinus between the tips of fifth and sixth veins.

Female.—First antennal joint yellow with the upper edge black; middle tarsi wholly deep black, contrasting strongly with the wholly yellow tibiae, their first joint not much thickened and with a single bristle above, middle tibiae with one long bristle below, without the opalescent spot at tip on upper surface; face wide, yellowish white; wings with the anal angle prominent as in the male, but without the sinus between the tips of the fifth and sixth veins; they are a little wider and more rounded on the hind margin than they are in the male.

Redescribed from the single male type specimen in the National Museum, which was taken by Mrs. Slosson at Mount Washington, New Hampshire; several males and 2 females taken at Hopedale and Caribou Island, Labrador, by Packard; and 1 female taken in the White Mountains, New Hampshire.

The female standing with the type in the United States National Museum collection is probably another species. A female taken at Fort Wrangle, Alaska, with the middle tarsi wholly black has the tips of the middle tibiae blackened, and the first and most of the second antennal joints yellow; the middle tibiae have the single long bristle below, but their basitarsi have no bristle above; it no doubt belongs to still another species.

Type.—Male, Cat. No. 12766, U.S.N.M.

No. 130. DOLICHOPUS UXORCULA, new species.

Female.—Length 4.5 mm.; of wing 4 mm. Face wide, grayish or yellowish gray; front green with bronze or blue reflections. Antennae yellow with the apical half of third joint blackish; third joint a little longer than wide, pointed at tip. Lateral and inferior orbital cilia yellowish, about eight of the upper cilia on each side black.

Thorax green, sometimes with bronze reflections; dorsum dulled with grayish or brownish pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections and a little white pollen on its sides.

Fore coxae yellow with conspicuous little black hairs on their anterior surface; middle and hind coxae black with their tips narrowly yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle. Posterior tibiae a little blackened at tip, middle tibiae also a little darkened at extreme tips, with one long bristle below. Fore tarsi one and a fourth times as long as their tibiae, black or brownish from their base, first joint as long as the three following taken together, fifth longer than the fourth; middle tarsi a little longer than their tibiae, wholly deep black, first joint but little thickened, without a bristle above, about as long as the two following joints taken together. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 217) grayish, a little clouded along the cross-vein and the last section of fourth vein; last section of fourth vein bent before its middle; anal angle prominent.

Described from 3 females: 1 taken at Fort Wrangle, Alaska, by Wickham; 1 taken at Helena, Montana, August 9, 1901, by A. L. Melander; and 1 at Huntington Lake, Fresno County, California, July 27, 1919, at 7,000 feet elevation, by E. P. Van Duzee, and in the California Academy of Sciences.

Type.—Male, Cat. No. 23033, U.S.N.M., from Fort Wrangle, Alaska.

No. 131. DOLICHOPUS FULVIPES Loew.

Dolichopus fulvipes Loew, Cent., vol. 2, 1861, No. 61; Mon. N. Amer. Dipt., pt. 2, 1864, p. 61.

Male.—Length 4.75–5.75 mm.; of wing the same. Face moderately wide, long, reaching nearly to the lower corner of the eyes, rounded below, golden yellow. Front dark shining green, often blue, almost violet. First antennal joint (fig. 131*a*) yellow, rather long, the hairs on upper surface numerous and stiff; second joint yellow; third joint yellow with apical half blackish, twice as long as wide, somewhat elliptical, obtusely pointed at tip, arista inserted at the middle of the upper edge, as long as the antennae. Lateral and inferior orbital cilia yellow, about six of the upper cilia on each side black. Proboscis blackish; palpi yellow.

Thorax green with bronze and blue reflections, usually with a narrow bronze line on each side of the acrostichal bristles; dorsum a little dulled with gray pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black, its lamellae rather small, somewhat oval in outline, about one and a half times as long as wide, whitish with a very narrow black border on the apical margin, which is jagged and bristly, fringed above with delicate brown hairs.

Fore coxae yellow, their anterior surface with black hairs, there are a few minute yellow ones on outer edge of front side. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with minute yellow hairs on lower inner edge. Middle tibiae distinctly swollen at tip on the front side, this swollen part glabrous, shining and whitish opalescent. Hind tibiae a little infuscated at tip on inner side; there are about six large bristles in each row on upper surface, the glabrous stripe between these rows is broken by a few little hairs, inside of the inner row is another glabrous line. Fore and middle tarsi about as long as their tibiae, infuscated from the tip of the first joint, still the base of the second and third joints are often yellow; first joint nearly as long as the three following joints taken together; fourth and fifth of nearly equal length. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 131) grayish, sometimes a little tinged with yellowish in front; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, but with a deep, wide sinus between the tips of fifth and sixth veins, the hind margin being nearly parallel with the fifth vein for some distance, and forming a large lobe at tip of sixth vein which includes the prominent anal angle.

Female.—Face wide, grayish white; antennae as in the male but shorter; middle tibiae normal at tip, and with one large bristle below, their basitersi without a bristle above; wings (fig. 131*b*) normal, the hind margin rather evenly rounded, the anal angle not very prominent, rounded.

Redescribed from 12 males and 5 females. One male was taken at Franconia, New Hampshire, and 1 female taken at Machias, Maine, July 26, by C. W. Johnson; I have taken 10 males and 2 females in Erie County, New York, May 31–July 4, and 1 female at Kearney, Ontario, July 3; H. S. Parish took 1 pair at Waubamic, Ontario, June 14.

Type locality.—Illinois.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 132. DOLICHOPUS FLAVICOXA, new species.

Male.—Length 3.75–4.25 mm.; of wing 5 mm. Face quite wide, its sides nearly parallel, silvery white. Front violet, more green along the orbits. First antennal joint yellow, the upper edge sometimes black or the upper half may be infuscated, but scarcely black; second and third joints black, the latter but little longer than wide, rounded at tip. Lateral and inferior orbital cilia whitish, about six of the upper cilia on each side black.

Thorax green with bronze reflections; in one specimen the posterior portion of the dorsum and the scutellum are mostly violet; dorsum dulled with gray pollen; pleurae with white pollen. Abdomen green with coppery reflections; the white pollen on its sides rather thin. Hypopygium black; its lamellae (fig. 132*a*) small, oval, whitish with a narrow black border on apical margin, which is jagged and bristly, fringed above with brown, below with a few pale hairs.

Coxae yellow, middle pair a little brownish on outer side; fore coxae with minute, delicate, yellowish hairs on the anterior surface. Femora and tibiae yellow. Middle femora with one stout and one slender preapical bristle; hind femora with one rather long curved preapical bristle, ciliated below with a few long whitish hairs, the longest of which are as long as the width of the femora. Posterior tibiae a little brownish at tip, but little thicker than the others. Fore tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which is as long as the three following joints taken together, fourth joint a little longer that the fifth. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above; middle tibiae with three bristles below, two near apical third and one near basal third. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 132) tinged with brownish gray; costa with a rather small knot-like enlargement at tip of first vein; last section of fourth vein a little bent at basal third; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle not being prominent; the wing widest just basally from the tip of fifth vein, narrowing from that point to the root of the wing.

Female.—Agrees with the male in the color of the front, thorax, abdomen, legs, feet, and wings, also in having pale hairs on the fore coxae, and in the form of the wing, except that the costa is not enlarged at tip of fifth vein and the wing is perhaps a little broader. It differs in having the face wide, grayish white; the fore tarsi shorter, being about as long as their tibiae; and the hind femora without cilia below; the middle and hind femora each have one preapical bristle. The bristles on middle tibiae and basitarsi are as in the male.

Described from 2 males and 2 females, taken in Polk County, Wisconsin, in July, by C. F. Baker, and given by him to J. M. Aldrich.

Type.—Male, Cat. No. 23034, U.S.N.M.

No. 133. DOLICHOPUS VARIABILIS Loew.

Dolichopus variabilis LOEW, Neue Beitr., vol. 8, 1861, p. 17; Mon. N. Amer. Dipt., pt. 2, 1864, p. 50.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 11.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 148.—JOHNSON, Insects of New Jersey, 1909, p. 756.

Male.—Length 4–5 mm.; of wing 4–4.5 mm. Face narrow, yellowish, more white near the palpi. Front shining green. Antennae (fig. 133) yellow, rather long; third joint more or less blackened at tip, a little longer than wide, somewhat oval in outline, but pointed at tip. Proboscis brown; palpi yellow. Lateral and inferior orbital cilia white, about five of the upper cilia on each side black.

Thorax green with coppery or bronze reflections; dorsum slightly dulled with grayish pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections, its sides with white pollen and with yellowish hairs on second and third segments. Hypopygium black; its lamellae (fig. 133*a*) of moderate size, somewhat triangular in outline, but rather suddenly narrowed at base, whitish with a very narrow black border on apical margin, this black widens at upper and lower corners, jagged and bristly at apex, fringed above with little black hairs.

Fore coxae pale yellow, their anterior surface covered with white pollen and minute white hairs. Middle and hind coxae yellow with the outer surface more or less blackened. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on the lower inner edge with a few long yellowish hairs, the longest of which are longer than the width of the femora. Posterior tibiae very little thickened, their inner surface with a glabrous stripe on basal half. Fore tarsi about one and a half times as long as their tibiae, black from the tip of the first joint, which is about equal in length to the two following joints taken together, third nearly as long as second, fifth scarcely as long as fourth. Middle tarsi about as long as their tibiae, black from the tip of the first joint, which has a large bristle on upper side at apical third. Hind tarsi wholly black, a little longer than their tibiae. Calypters and halteres yellow, the former with yellow cilia, sometimes there may be a black hair among them.

Wings grayish, a little tinged with yellowish brown in front; costa scarcely enlarged at tip of first vein, last section of fourth vein a little bent before its middle; hind margin of wing a little indented at tip of fifth vein; rather evenly rounded, but the anal angle somewhat prominent.

Female.—Face wider than in the male but narrow for a female; the front in one specimen is blue; fore tarsi but little longer than their tibiae; fore coxae with more or less black hairs on inner half of their anterior surface; hind tibiae without the glabrous stripe on inner surface; hind femora without cilia below, but with a row of little delicate white hairs on lower inner edge; otherwise as in the male. Middle tibiae with three bristles below, one pair at apical third and one bristle at basal third.

Redescribed from many specimens. The Aldrich collection contains specimens from Westville, New Jersey, August 14; Philadelphia, Pennsylvania, August 20; Delaware Water Gap, New Jersey, July (Johnson); Franconia, New Hampshire; Sheridan, Wyoming (Metz); New Bedford, Massachusetts (Hough); Wisconsin; Seattle, Washington, Olga, Washington, July 14; Lafayette, Indiana, July 3 and August 21. I have it also from Downie Creek, Selkirk Mountains, British Columbia, August 9; Little Valley, New York, July 31; Niagara Falls, New York, September 8; Erie County, New York, July 13–September 6; Waubamic, Ontario, August 7; Kearney, Ontario, August 3; Lake McDonald, Montana, August 14; Priest Lake, Idaho, August 1 (Melander).

Type locality.—New York. Aldrich reports it from Massachusetts, Pennsylvania, New Jersey, and South Dakota; Melander and Brues from Illinois and Wisconsin; Chagnon, from Montreal, Quebec; Johnson, from Dunfield, New Jersey, July 14; and Westville, New Jersey, August 14.

No. 134. DOLICHOPUS VARIABILIS, var. GRACILIS, Aldrich.

Dolichopus gracilis Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 15.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

The description of *variabilis* answers for *gracilis* in every particular except as to the color of the calypters, which is yellow in *variabilis* and black in *gracilis*; it is often partly yellow in this form, so I am placing this as a variety of *variabilis*. (Fig. 134, wing).

I have seen the type specimen taken at Philadelphia, Pennsylvania, August 4, and specimens taken at Cuyhoga Falls, Ohio, August 10, by W. V. Warner; Beverly, Massachusetts, October 9; Erie County, New York, July 27–September 3; Kearney, Ontario, August 1.

Type.—In collection of J. M. Aldrich.

No. 135. DOLICHOPUS LUTEIPENNIS Loew.

Dolichopus luteipennis Loew, Neue Beitr., vol. 8, 1861, p. 18; Mon. N. Amer. Dipt., pt. 2, 1866, p. 51.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 4.5–5 mm.; of wing the same. Face rather narrow, silvery white, a very little yellowish near the antennae. Front shining green with a very little gray pollen. Antennae yellow; third joint about as long as wide, a little darkened and pointed at tip; arista dark brown, not quite as long as the antennae. Lateral and inferior orbital cilia pale yellow, only a few of the upper cilia black.

Thorax green; dorsum dulled with brownish gray pollen, its lateral edges narrowly yellow; pleurae more blackish with gray pollen. Abdomen green with more or less coppery or bronze reflections; its sides covered with grayish pollen, which extends upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular but rounded on upper apical corner, apical margin narrowly bordered with black, jagged and bristly, fringed above with delicate little brown hairs.

Coxae yellow; middle pair more or less blackish on outer surface, fore coxae with minute, delicate, yellow hairs on the front surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with long yellowish white hairs, which are fully as long as the width of the femora, these are continued to the base by delicate little yellow hairs, apical fifth nearly bare below. Posterior tibiae with an elongated brown or black shining spot on each side at tip, which leaves only a yellow line above and below. Fore tarsi nearly one and three-fourths times as long as their tibiae, pale yellow with the last joint black; second and third joints each a little shorter than the joint preceding it, fourth and fifth joints of about equal length, taken together about as long as third. Middle tarsi about as long as their tibiae, becoming a little infuscated toward their tips. Hind tarsi wholly black; in one of the type specimens the hind basitarsi are yellow with black tips. Calypters, their cilia, and the halteres yellow.

Wings (fig. 135) slightly tinged with yellowish gray, veins and costa yellowish brown, sometimes almost yellow; costa scarcely enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent but rounded.

Redescribed from the 2 type specimens and 3 males from South Dakota taken by J. M. Aldrich; and United States National Museum material from Kaslo, British Columbia, July 17.

Type locality.—Washington, District of Columbia. Osten Sacken reports it from Illinois, Melander and Brues from Vancouver Island.

There are two type specimens on the same pin, one of which has the hind tarsi wholly black, while in the other they are only slightly infuscated from the tip of the first joint. The antennae in both are wholly yellow.

Type.—Collection of J. M. Aldrich.

No. 136. DOLICHOPUS GREENEI, new species.

Male.—Length 4.5 mm.; of wing the same. Face of moderate width, silvery white. Front shining blue-green. Antennae dark yellow; third joint slightly darker and obtusely pointed at tip, about one and a half times as long as wide. Lower orbital cilia pale.

Thorax green; dorsum with bronze reflections in front, blue and violet on posterior portion, a little dulled with almost invisible brownish pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant. Hypopygium black with green reflection on basal portion; its lamellae (fig. 136*a*) moderately large, somewhat triangular in outline, but with the upper angle broadly rounded, whitish with rather wide black border on the apical and the rounded upper margin, jagged and bristly on lower corner, otherwise fringed with delicate brown hairs on upper and apical margins.

Coxae yellow, middle pair a little darkened on outer surface; anterior pair with minute yellow hairs on the front surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge of apical half with rather stout yellow hairs, which are of nearly equal length and only two-thirds as long as the width of the femora; the cilia begin about the middle of the femora but do not reach the tip, otherwise the hind femora are nearly glabrous on their lower half, having only some very minute yellow hairs. Posterior tibiae a little thickened; inner surface glabrous on basal half, the glabrous portion gradually narrowing to form a line just inside of the inner row of large bristles which reaches the tip. Fore tarsi one and three fourths times as long as their tibiae, plain, slender, first three joints yellow, each a little shorter than the joint preceding it, the first two together fully as long as the tibia, fourth joint black, about half as long as the third, fifth a little shorter than the fourth, black at base, yellowish at tip. Middle tarsi one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, still the base of second and third joints paler; middle basitarsi with a small bristle at apical third on upper edge. Hind tarsi black from the tip of the first joint, which has two large bristles on upper surface. Calypteres and halteres yellow, the former with black cilia,

Wings (fig. 136) grayish; costa without an enlargement at tip of first vein, somewhat yellowish on inner edge; last section of fourth vein bent near basal third, parallel with third from this point to its tip, the third vein not being bent backward at tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent but rounded.

Described from 1 male, which was taken at Chain Bridge, Virginia, June 27, by C. T. Greene, for whom the species is named.

Type.—Male, Cat. No. 23035, U.S.N.M.

The four species, *variabilis* Loew, *gracilis* Aldrich, *luteipennis* Loew and *greenei*, new species, are about the same size; antennae yellow and formed almost alike; have the hind femora ciliated with yellow hairs; the middle tibiae in all have three bristles below, two not far from apical third and one near basal third; middle basitarsi with a rather small but distinct bristle above; and the fore coxae in all have yellow hairs on the front surface.

The first two are alike, except that *variabilis* has yellow cilia on the calypteres, and *gracilis* black cilia; they differ from the other two in having the fore tarsi shorter, about one and a fourth times as long as the tibiae, while in the last two the fore tarsi are about one and three-fourths times as long as the tibiae; in the first two they are black from the tip of the first joint, while in the last two they are yellow, except the last one or two joints. The species *greenei* differs from *luteipennis* in having the cilia of the hind femora shorter than the width of the femora, while in the latter it is longer, or at least as long, as the width of the femora; in *luteipennis* the third vein of the wing is distinctly bent backward at tip so as to approach the fourth a little, while in *greenei* the third vein is nearly straight and parallel with the fourth; the fourth and part of fifth joint of fore tarsi are black in *greenei*, but only the fifth is black in the other; the cilia of the calypteres is black in the former, yellow in the latter.

No. 137. DOLICHOPUS WHEELERI Melander and Brues.

Hygroceleuthus wheeleri MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 126, figs.

Male.—Length 4.5 mm.; of wing 4 mm. Face long and narrow, silvery white. Front violet, more bluish along the orbits. Antennae yellow; third joint black, longer than wide, somewhat oval in outline, obtusely pointed at tip. Lower orbital cilia whitish, the black cilia descending nearly to the middle of the eye height.

Thorax green, scutellum blue in the center; anterior slope of the dorsum covered with white pollen; pleurae with gray pollen. Abdomen green with black incisures and coppery and bronze reflections on the hind margins of the segments; the white pollen on its sides extending upon the dorsum. Hypopygium black; its lamellae rather large, oval, whitish, apparently without a black border, a little jagged and bristly at apex.

Fore coxae yellow with minute black hairs on the anterior surface· Middle and hind coxae yellow with the outer surface largely black. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below. Posterior tibiae a little thickened; the glabrous stripe on upper surface distinct and reaches their whole length. Middle tibiae slender, nearly twice as ong as their femora, glabrous on their upper surface. Fore tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, middle tarsi (fig. 137*b*) deep black, scarcely as long as the fore tibiae, their basitarsi fringed with long, deep black hairs, so as to give them an oval appearance, about half as wide as long, to the outside of the hairs, three-fourths as long as the remaining four joints taken together. Hind tarsi wholly black, scarcely at all yellow at base. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 137) grayish, slightly tinged with yellowish brown in front of third vein; costa not enlarged at tip of fifth vein; last section of fourth vein a little bent before its middle and with a slight cloud at the bend; hind margin of wing not indented at tip of fifth vein; anal angle very prominent, and with a deep sinus between the tips of fifth and sixth veins, which forms something of a lobe at the anal angle.

Female.—A female in the United States National Museum which is in very poor condition is, no doubt, the female of this species; it is a very bright shining green with most of the thorax and front violet. Face not very wide for a female, but rather long, silvery white. Antennae yellow, scarcely darker at tip, third joint pointed at tip, longer than wide. Proboscis and palpi yellow. Middle tarsi plain, a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above near apical third. Middle tibiae with three bristles below, two near apical third, and one near basal third. Hind tibiae wholly pale yellow; hind tarsi wholly black. Wings (fig. 137*a*) with the anal angle very prominent for a female, and without any trace of a lobe at tip of sixth vein and without any indication of the sinus found in the male.

Redescribed from 1 male in the United States National Museum, taken by Mrs. Slosson on Mount Washington, New Hampshire, and 1 female taken by Morrison, in the White Mountains, New Hampshire.

Type locality,—Woods Hole, Massachusetts. I have seen several males from New England in the collection of C. W. Johnson.

Type.—In American Museum of Natural History, New York City.

No. 138. DOLICHOPUS LONGIMANUS Loew.

Dolichopus longimanus Loew, Neue Beitr., vol. 8, 1861, p. 14; Mon. N. Amer. Dipt., pt. 2, 1864, p. 38.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 10.—Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 425.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 6–7.2 mm.; of wing 5–6.5 mm. Face moderately wide, pale yellowish to dark ocher yellow. Front dark green, slightly dulled with gray pollen. Antennae black, first joint usually a little yellowish at lower apical corner; third joint a little longer than wide, pointed at tip; inferior orbital cilia yellowish, the black cilia of the upper orbit descending to the middle of the eye.

Thorax green with a median, more or less bronze colored, stripe on the dorsum, which is covered with thin grayish pollen; pleurae dulled with grayish pollen. Abdomen green with bronze or reddish coppery reflections which are sometines wholly wanting; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black, its lamellae (fig. 138*b*) of moderate size, somewhat oval in outline, whitish with a broad black border on apical margin and on upper edge, jagged and bristly at lower apical corner, fringed on upper edge with black hairs.

Fore coxae yellow, blackened at base, on outer side the black reaches beyond the middle, clothed with black hairs on anterior surface; middle and hind coxae black with extreme tips yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge for about one-fourth their length, leaving the basal half and apical fourth bare, the longest of these hairs are about as long as the width of the femora. Posterior tibiae thickened, glabrous on inner surface for more than half their length, lower edge with a row of large bristles. Fore tarsi (fig. 138*a*) nearly twice as long as their tibiae, first four joints yellow, fifth black, compressed, a little longer than the fourth, somewhat oval in outline, fringed above with little black hairs; first joint four-fifths as long as the tibiae, second fully half as long as first, third a little shorter than second, fourth slightly more than half as long as third. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle near the middle of its upper edge, the middle tibiae have four bristles on lower surface, one pair near apical third and two single bristles preceding the pair. Hind tarsi wholly deep black, constrasting sharply with the wholly yellow tibia. Calypters, their cilia and the halteres yellow.

Wings (fig. 138) tinged with gray; costa with an elongated enlargement at tip of first vein; last section of fourth vein bent before its middle; third vein bent backward at tip, still its tip rather distant from the tip of fourth vein as the fourth is also bent back a little; hind margin of wing a little indented at tip of fifth vein, somewhat expanded between the tips of fifth and sixth veins; anal angle prominent.

Female.—Face wide, covered with whitish pollen; third antennal joint nearly round, still slightly pointed at tip; hind tarsi often yellow at base; fore coxae a little less black; bristle on middle basitarsus a little nearer the tip than in the male; hind femora without cilia, their tibiae without the glabrous surface on inner side and but little thickened; wings about as in the male, except that the costa is scarcely thickened at tip of first vein and are more yellowish.

Redescribed from many males and females. In the Aldrich collection are specimens from Polk County, Wisconsin, July, taken by Baker; Custer, South Dakota, and Bottineau, North Dakota, June 20, 1918, taken by J. M. Aldrich, Franconia, New Hampshire, taken by Mrs. Slosson; Hanover, New Hampshire, taken by C. M. Weed; and Kukak Bay, Alaska, July 4, 1899, taken by Kincaid. In the United States National Museum are specimens from Colorado, Alaska, and Woodstock, Virginia, June, 1897, taken by F. C. Pratt. I have taken it at Olean, New York, August 5; Ridgeway, Ontario, June 26–July 15; Niagara Falls, Ontario, July 31, 1910; Kearney, Ontario, July 3–9, 1909, and July 26, 1911.

Type localities.—English River, Canada; and West Point, New York. Melander and Brues report it from Massachusetts and Wisconsin.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

A note on the mating habits of this species is given in the introduction.

No. 139. DOLICHOPUS SUBCILIATUS Loew.

Dolichopus subciliatus Loew, Mon. N. Amer. Dipt., pt. 2, p. 42.

The following description is a copy of Doctor Loew's:

Metallic-green, bright. Front metallic-green. Antennae black; on under side of the first joint I am not able to discover any lighter coloring; third joint rather blunt at the tip. Face grayish-yellow, palpi yellow. Cilia of the inferior orbit pale-yellowish. Hypopygium black; lamellae of medium size, ovate, white, with narrow black border, on the apical margin somewhat jagged and fringed with black bristles. The four posterior coxae blackish with yellow tip. Fore coxae yellow, only at the extreme basis somewhat blackened, upon the anterior side beset with very delicate black hairs, which do not reach to their base. Feet pale yellow. Hind femora with a bristle before the tip, upon the greater part of the under side sparsely ciliated with moderately long yellowish hairs. Hind tibiae stout, but not exactly thickened, not hairy upon the first half of the hind side [basal half of inner surface]; brownish at extreme end. Fore tarsi twice as long as the tibiae; their four first joints very slender, yellow; the first joint nearly as long as the three following ones together; the third somewhat shorter than the second; the fourth hardly half as long as the third, the fifth joint black, flattened, broad, still not as large as in *D. batillifer;* upon its upper edge it is beset with appressed minute black hairs. Middle tarsi from the tip of the first joint blackened. Hind tarsi entirely black. Cilia of the tegulae [calypters] yellowish-white. Wings hyaline, somewhat grayish, at the tip of the first longitudinal vein with a long but not very stout swelling, which gradually merges into the costa; fourth longitudinal vein not broken.

Length 0.21–0.22, wing 0.25 inch. Fort Resolution, Hudson's Bay Territory.

The species has not been recognized since it was described. It is probably an Arctic species and as that region has not been visited much by collectors it has never been found. The type at the Museum of Comparative Zoology has been completely destroyed by museum pests.

No. 140. DOLICHOPUS AMPLIPENNIS, new species.

Male.—Length 5.5–6 mm.; of wing 6–6.5 mm. Face rather wide, yellowish gray, almost ocher yellow, a little paler on the lower portion. Front shining blue-green. Antennae wholly black or very slightly tinged with yellow on lower edge of first joint; third joint somewhat oval, a little longer than wide, obtusely pointed at tip. Lower orbital cilia yellow, the black cilia descending below the middle of the eye.

Thorax green with bronze brown reflections which form wide vittae on the dorsum, which is covered with brown pollen leaving the bronze vittae more shining; the pollen along the front edge is more gray. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 140*b*) large, elongate oval, twice as long as wide, yellowish, with wide black border on apical margin, jagged and bristly on lower half of apical edge, fringed above with dark hairs.

Fore coxae yellow, blackened at base on outer surface for one-third their length, anterior surface with numerous minute black hairs and some delicate pale hairs on upper outer corner; middle and hind coxae black with yellow tips, sometimes narrowly yellowish at base. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge for about one-fourth their length with dense yellow hairs, which are as long as the width of the femora and leave the basal half and apical fourth bare. Posterior tibiae thickened, a little compressed, lower edge with a row of bristles of uneven length, the longest being as long as those on upper edge; the glabrous stripe on upper surface narrow and not conspicuous, but with a broad glabrous space on the lower part of the basal half of the inner surface, their tips not at all infuscated. Middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, sometimes with one more bristle near the middle. Fore tarsi (fig. 140*a*) twice as long as their tibiae, the first joint nearly as long as the tibia and a little longer than the three succeeding joints together; first four joints yellow, fourth more than half as long as third and slightly widened at tip; fifth as long or slightly longer than fourth, black, compressed, widest near the apex, where it is slightly more than half as wide as long, somewhat triangular; the sides of this joint have a slight yellowish or reddish luster in certain lights. Middle tarsi nearly one and a half times as long as their tibiae, the first two joints being nearly as long as the tibia, black from the tip of the first joint, still the base of second a little yellowish; middle basitarsi with a large bristle on upper side. Hind tarsi black, sometimes yellowish on basal portion of first joint. Calypters, their cilia, and the halteres yellow; sometimes there are a few black hairs among the cilia.

Wings (fig. 140) grayish, veins yellowish; costa with a slight elongated enlargement at tip of first vein; last section of fourth vein bent at basal third; hind margin of wing a little indented at tip of fifth vein, a little widened between the tips of the fifth and sixth veins; anal angle prominent.

Described from 2 males from Colorado.

Type.—Male, Cat. No. 23036, U.S.N.M.

This species differs from *subciliatus* Loew in having the cilia of the hind femora confined to about one-fourth of the lower edge, while in that species it extends nearly the whole length of the femora; it also differs in other respects a little.

No. 141. DOLICHOPUS SPLENDIDUS Loew.

Dolichopus splendidus Loew, Neue Beitr., vol. 8, 1861, p. 21; Mon. N. Amer. Dipt., pt. 2, 1864, p. 44.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5–5.5 mm.; of wing 4.5 mm. Face rather wide, yellowish white, paler below. Front shining green. Antennae black; first joint usually wholly black, but sometimes the lower apical corner is distinctly yellow; third joint longer than wide, rounded at tip, sometimes obtusely pointed. Lateral and inferior orbital cilia yellowish.

Thorax bright shining green, sometimes with reddish coppery spots before the suture and along the median line of the dorsum; dorsum distinctly white pollinose along the front; pleurae dulled with white pollen. Abdomen green, sometimes with coppery reflections. Hypopygium black; its lamellae (fig. 141*a*) moderately large, somewhat round in outline, but straight below, whitish with narrow black border on apical margin, jagged and bristly on lower half of the apical edge, fringed with black hairs above.

Fore coxae wholly yellow, with very minute black hairs on their anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge for nearly one-half their length with yellow hairs, the longest of which is longer than the width of the femora. Posterior tibiae a little thickened, a little brownish on the sides at tip. Fore tarsi (fig. 141*b*) one and a half times as long as their tibiae; the first two joints taken together nearly equal in length to the tibia; first joint a little longer than the second and third together, third a little shorter than the second, fourth about half as long as second, slightly compressed and almost whitish, fifth joint black, about as long as third, compressed, widest near the tip, where it is about as wide as long, somewhat triangular in outline; first three joints yellow. Middle tarsi a little longer than their tibiae, blackened from the tip of the first joint, which has a large bristle above. Hind tarsi wholly black. Calypters, their cilia, and the halteres yellow.

Wings (fig. 141) grayish; costa with an elongated enlargement at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent.

Female.—Face wide, whitish; fore tarsi plain, more or less infuscated from the tip of first joint, the last three joints black; they are a little longer than their tibiae, fifth joint as long as the third, which is a little shorter than second, fourth shorter than fifth; middle tibiae with three bristles below, one pair at apical third and one bristle at basal third; hind femora without cilia below; wings about as in the male; color of middle and hind legs about as in the male; cilia of the calypters yellow.

Redescribed from many males and females. The Aldrich collection has specimens from Algonquin, Illinois, (W. A. Nason); Agricultural College, Michigan, June 15, 1889; Brookings, South Dakota; Hammond, Indiana, June 24, 1915; Michigan City, Indiana, June 29, 1915 (last three lots collected by Aldrich); and Montreal, Quebec, June 15, 1901. I have taken specimens at Ridgeway, Ontario, June 7–July 15; Chatham, Ontario, June 11; Kearney, Ontario, July 2–7, 1909; Melander has specimens from Chicago, Illinois; and Waubamic, Ontario, June 14. In the United States National Museum are specimens from Dead Run, Fairfax County, Virginia, June 22, 1915; Colorado, (Baker); Tower City, North Dakota, June 15, (G. I. Reeves); and from Beverly, Massachusetts, June 19 (Riley). I saw many specimens in the collection of C. W. Johnson from New England.

Type locality.—White Mountains, New Hampshire. Melander and Brues report it from Ontario, Michigan, and Illinois.

The female of this species differs from that of *splendidulus* Loew in having the bend in the last section of the fourth vein of the wing very near its middle, while in that species it is considerably before the middle.

No. 142. DOLICHOPUS SPLENDIDULUS Loew.

Dolichopus splendidulus Loew, Cent., vol. 5, No. 82; Mon. N. Amer. Dipt., pt. 2, 1864, p. 327.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 4.5–5 mm.; of wing 5–5.3 mm. Face rather wide, pale yellowish, more white below. Front shining green. Antennae wholly black; third joint a little longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish, about seven of the upper cilia on each side black.

Thorax green with grayish pollen, which sometimes dulls the dorsum, but leaves three vittae more shining. Abdomen green with very narrow black incisures, covered with white pollen which forms spots on the sides of the segments. Hypopygium black; its lamellae (fig. 142*b*) of moderate size, somewhat round in outline, whitish with narrow black border on upper and apical margins, jagged and bristly at apex, fringed with little black hairs on upper edge.

Fore coxae yellow, scarcely darkened at base on outer side, with little black hairs on the anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with rather scattering yellowish hairs for about one-third their length, beginning at the middle of the lower inner edge but not quite reaching the tip, the longest hairs not quite as long as the width of the femora. Posterior tibiae only slightly thickened, their tips not or scarcely darkened at all; inner surface with a glabrous space on basal half. Fore tarsi (fig. 142*a*) fully one and a half times as long as their tibiae, the first two joints taken together being nearly as long as the tibia; first three joints yellow, fourth whitish, fifth black; first joint a little longer than the second and third together, third a little shorter than the second, fourth about three-fourths as long as the third, a little compressed and widened at tip, fifth nearly or quite as long as second, much compressed and widened, somewhat oval in outline, still widest near the tip, slightly more than one-half as wide as long. Middle tarsi about one and a fourth times as long as their tibiae, black from the tip of the first joint, which has a large bristle above. Hind tarsi wholly black. Calypters, their cilia and the halteres yellow.

Wings (fig. 142) grayish; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein a little bent some distance before its middle; hind margin of wing a little indented at tip of fifth vein; anal angle prominent; third vein bent backward a little at tip.

Female.—Face wide, yellowish white; legs and feet as in the female of *splendidus;* wing as in the male, the bend in the last section of fourth vein being beyond basal third but some distance before the middle.

Redescribed from the type specimens and 5 males and several females. The males were taken as follows: 2 in Polk County, Wisconsin, by Baker, in July, in the Aldrich collection; I have a specimen from Bretton Woods, New Hampshire, taken by E. P. Van Duzee; and I took 2 at Kearney, Ontario, July 5, 1909.

Type locality.—White Mountains, New Hampshire, July. Melander and Brues report it from Illinois and New Hampshire; C. W. Johnson has several specimens from New England in his collection.

Types.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

Splendidus and *splendidulus* may be separated in the males by the enlargement of the costa at tip of first vein. In *splendidus* it is elongated, and in *splendidulus* it is smaller and knotlike; the fifth joint of fore tarsi is also somewhat different in the two species, for in the former it is about as long as the third joint and somewhat triangular, while in *splendidulus* it is about as long as the second joint and oval in outline; the cilia on lower edge of hind femora are a little longer than the width of the femora in *splendidus,* while in the other form it is scarcely as long as the width of the femora.

No. 143. DOLICHOPUS NUDUS Loew.

Dolichopus nudus Loew, Mon. N. Amer. Dipt., pt. 2, 1864, p. 41.

The following is copied from Doctor Loew's original description:

Male.—Metallic-green, bright. Front metallic-green. Antennae black; the under side of the first joint yellowish-red; third joint rather blunt at the tip. Face ocher-yellow; palpi yellow. Cilia of the inferior orbit pale yellowish. Hypopygium black;

lamellae of medium size, ovate, white, with a rather narrow black border, on the apical margin jagged and fringed with black bristles. Four posterior coxæ blackish with yellow tip. Fore coxae yellow, only somewhat blackened at the extreme basis, beset upon the anterior side with delicate black hairs, which reach nearly to their base. Feet pale yellow. Hind femora before the tip with a bristle, upon the under side only with very short minute pale hairs. Hind tibiae stout but not exactly thickened, upon the first half of the hind side without hairs, at the extreme tip brownish. Fore tarsi twice as long as the tibiae; their first four joints very thin, yellow; first joint as long as the three following ones together; third somewhat shorter than the second; the fourth hardly half as long as the third; the fifth joint black, flattened, broad, still not as large as in *D. batillifer;* upon its upper margin it is beset with appressed minute black hairs. Middle tarsi from the tip of the first joint blackened; hind tarsi entirely black, Cilia of the tegulae yellowish-white. Wings hyaline; near the tip of the first longitudinal vein with a long but not very thick swelling, which gradually merges into the costa; fourth longitudinal vein not broken.

Female.—Wings and feet plain, fore tarsi from the tip of the first joint blackened. All the rest as in the male.

The single type specimen which I found at the Museum of Comparative Zoology in January, 1919, had been entirely destroyed, except the wings, which still adhere to the pin; from which I made the following notes:

The costa is distinctly enlarged, the enlargement beginning a little before the tip of the first vein and gradually tapering to the tip of the costa, this enlargement although distinct is rather small; the bend in the last section of the fourth vein is just beyond its basal third and beyond this bend the fourth vein is distinctly arcuated; the third vein is also considerably and rather evenly arcuated from a point nearly opposite the cross-vein to its tip (this is a rather peculiar character); the second vein also shows a little of this arcuation; the hind margin of the wing is quite evenly rounded, the anal angle being rounded, not at all prominent; the hind margin at the tip of the fifth vein is a little drawn in from both sides so as to form a slight sinus, but there is scarcely an indentation at tip of fifth vein in the usual sense used in these descriptions.

Type locality.—Fort Resolution, Hudson Bay Territory.

No. 144. DOLICHOPUS DISCIFER Stannius.

Dolichopus discifer Stannius, Isis, 1831, p. 37.—Schiner, Fauna Austr., vol. 1, p. 216.—Loew, Mon. N. Amer. Dipt., pt. 2, 1864, p. 71.—Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 423.—Lundbeck, Dipt. Danica, vol. 4 1918, p. 95.

Dolichopus tanypus Loew, Neue Beitr., vol. 8, 1861, p. 71.

Male.—Length, 4.75–5.5 mm.; of wing, 5–5.5 mm. Face of moderate width, rather long, silvery white, sometimes a little yellowish on the upper part. Front shining green. Antennae black; first joint yellow below on lower half or more; third joint large, about two and a half times as long as wide, somewhat elliptical in outline, rather pointed at tip; arista inserted beyond the middle of the third joint.

Lateral and inferior orbital cilia white, about six of the upper cilia on each side black.

Thorax green with bronze reflections, which sometimes form a median vitta on the dorsum; dorsum dulled with a little grayish pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections and black incisures; the white pollen on the sides extends over the dorsum. Hypopygium black; its lamellae of moderate size, somewhat oval, whitish with narrow black border on apical and upper margins, jagged and bristly at apex, fringed above with black, below with a few pale hairs.

Fore coxae yellow, their anterior surface covered with silvery pollen and minute white hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia, but with minute yellow hairs below. Posterior tibiae a little infuscated at tip, especially on inner side, scarcely thickened, the usual glabrous stripe on upper surface distinct, but a little broken by a few little hairs; there is also a glabrous line just inside of the inner row of large bristles; middle and hind tibiae each with one bristle below. Fore tarsi (fig. 144*a*) nearly twice as long as their tibiae, slender, first four joints yellow, each more slender than the preceding one; first nearly three-fourths as long as the tibiae, third and fourth of nearly equal length, each a little shorter than the second; fifth joint compressed, black with the extreme base white, nearly half as long as the fourth, oval, a little longer than wide. Middle tarsi one and a fourth times as long as their tibiae, infuscated from the tip of the first joint; first joint without a bristle above. Hind tarsi wholly black, or sometimes the first joint a little reddish at base. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 144) grayish, sometimes with a slight yellowish brown tinge in front of the third vein; costa slightly enlarged at tip of first vein and tapering to its tip; last section of fourth vein a little bent near its basal third; third and fourth veins distinctly approaching each other toward their tips; hind margin of wing a little indented at tip of fifth vein, and with a slight sinus near sixth vein; wing slightly narrowed toward the base, still the anal angle rather prominent, forming on account of the sinus a small lobe-like projection.

Female.—Face wide, grayish white; third antennal joint only a little longer than wide, pointed at tip; fore coxae with a few minute black hairs along the inner edge; fore tarsi plain, a little longer than their tibiae, first four joints dark yellow, fifth joint black, all the joints of decreasing length; middle tarsi only a little longer than their tibiae; hind margin of wing more evenly rounded than in the male, the anal angle rounded; wing not narrowed toward the base. Otherwise about as in the male.

Redescribed from many males and females. One pair were from Europe, the others were taken as follows: St. Hilaire, Quebec, July 1; Parry Sound, Ontario, June 4; Kearney, Ontario, July 3; Brule Lake, Ontario, August 3; Ridgeway, Ontario, June 7; Colden, New York, July 19; Polk County, Wiconsin, July; Kodiak, Alaska, July 20; Bond Lake, Ontario, July 16; Toronto, Ontario, July 18; Waubamic, Ontario, June 14; Lyndon, Vermont, August 22.

Loew reports it from English River, Canada; Red River; Sitka, Alaska; and the White Mountains, New Hampshire. Coquillett reports it from Alaska, several places. It is found in middle and northern Europe. Location of type unknown.

No. 145. DOLICHOPUS BOREUS, new species.

Male.—Length 5 mm.; of wing 4.7 mm. Face wide, scarcely narrowed below, silvery white, slightly tinged with gray, long, reaching nearly to the lower corner of the eye. Front green or blue-green, slightly dulled, antennae (fig. 145) black; first joint broadly yellow below; third joint fully twice as long as wide, pointed at tip, with the subapical arista inserted just above the point. Lateral and inferior orbital cilia yellowish white, about eight of the upper cilia on each side black.

Thorax green, or bronze brown with green reflections; dorsum dulled with brown pollen, pleurae with grayish pollen. Abdomen green, sometimes bronze brown with purple reflections. Hypopygium black; its lamellae of moderate size, somewhat oval in outline, but rather angulated at base above, not much longer than wide; yellowish with a black apical border, jagged and bristly at apex.

Fore coxae yellow with a blackish spot at base on outer side, their anterior surface covered with yellow hairs; there are a few little black hairs along the inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below; the little black hairs on their sides descend to the lower edge, although the lower ones are very minute; they have a few rather long black hairs at base above. Posterior tibiae a little thickened especially at tip, where they are blackened a little, most on inner surface; the glabrous stripe on upper surface is distinct and reaches the tip; on the inner surface there is a glabrous space just inside of the inner row of bristles, which is wide on basal portion and tapers to a narrow line at tip, uniting there with the stripe on upper edge. Fore tarsi (fig. 145*a*) nearly twice as long as their tibiae, first two joints black or blackish, third and fourth yellow, fifth black; first joint one and a fourth times as long as the second; second, third, and fourth of nearly equal length, the third being slightly the shortest; fifth small, compressed, oval, but little longer than wide, not over one-fourth as long as fourth. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint, which is without a bristle above and is nearly as long as the three succeding joints taken together; fifth joint about three fourths as long as fourth. Hind tarsi wholly black. Middle and hind tibiae each with one large bristle below near apical fourth. Calypters and halteres yellow, the former with black cilia.

Wings grayish; costa with a slight elongated enlargement at tip of first vein; last section of fourth vein slightly bent at basal third; third and fourth veins a little convergent toward their tips; anal angle rather prominent but rounded.

Described from 6 males taken at Ungava Bay, Labrador, July 22–29, by L. M. Turner.

Type.—Male, Cat. No. 23037, U.S.N.M.

While this species has a striking resemblance to *discifer* Stannius, still it differs in many points. The face is wider; the arista is placed much nearer the tip of third antennal joint; the hind femora have no yellow hairs on the lower edge of their sides; the first two joints of fore tarsi are black and quite thick; the tips of fore tibiae are slightly brownish; and the wings are not narrowed at their roots.

No. 146. DOLICHOPUS ANGUSTATUS Aldrich.

Dolichopus angustatus ALDRICH, Kansas Univ. Quart., vol. 2, p. 15.

The following is a copy of Doctor Aldrich's description. I have not seen the species, but Professor Melander has it in his collection. The drawings are from this specimen, which was taken at Woods Hole, Massachusetts.

Male. Antennae black, first joint in part yellow, third joint very long and wide with a sharp point; cilia of inferior orbit pale, of tegulae black, last joint of fore tarsus enlarged.

Face grayish yellow, front shining violet; first joint of antennae slender, arista inserted beyond the center of the third joint. Thorax bright bluish green, with a bronze stripe each side above the root of the wing, and a very narrow one in the middle; pleurae dark green, light dusted. Abdomen somewhat bluish green, more bronze before the incisures. Hypopygium black, the lamellae whitish, rounded with a black margin, jagged near the apex, and with curved black bristles. Fore coxae yellow, with small black hairs in front near the inner side, and some white dust. Middle and hind coxae yellow, the former considerably, the latter slightly, brownish toward the base. Femora and tibiae yellow, the hind femora not ciliated. Fore tarsi [fig. 146*a*] nearly twice as long as the tibiae, not very slender, the first four joints plain, yellow; fifth joint as long as the third, black, flattened; fourth somewhat flattened, but not otherwise modified; middle tarsi blackened from the tip of the first joint; hind tarsi wholly infuscated, still at the base not decidedly black; the color suggests, that the specimen may be immature. Wings [fig. 146] subhyaline, rounded at apex, the widest part beyond the middle, narrowed toward the base. Beyond the double flexure the fourth vein runs in a gentle curve parallel with the third vein, ending barely before the apex. Length 5 mm.; of wing 4.2 mm.

One male, Massachusetts (U. K.).

Type.—In University of Kansas.

No. 147. DOLICHOPUS COMPACTUS, new species.

Male.—Length 5.5 mm.; of wing the same. Face wide, only a little narrowed below, grayish white. Front green with bronze reflections. Antennae black; first joint yellow with a narrow black upper edge: third joint somewhat conical, about as long as wide, pointed at tip. Lateral and inferior orbital cilia yellowish white, about eight of the upper cilia on each side black.

Thorax green with coppery reflections; dorsum dulled with gray pollen; pleurae with whitish pollen. Abdomen green with coppery reflections and narrow black incisures; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large, nearly twice as long as wide, white with a broad black border on apical margin and extending upon the upper edge, jagged and bristly on lower half of apical margin, fringed above with black hairs, below with a few yellow hairs.

Fore coxae yellow with a blackish spot at base on outer side, their anterior surface covered with conspicuous black hairs, only a few pale ones on upper outer corner. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia, but with two or three rows of minute yellow hairs on the lower portion of their inner surface. Posterior tibiae a little blackish at extreme tip, only a little thicker than the others, the inner row of large bristles on upper surface with six, the outer with eight bristles, the usual glabrous stripe between the rows broken by little hairs; middle tibiae with one large bristle below near apical third and another near it on the lower part of the front surface. Fore tarsi (fig. 147*a*) one and three-fourths times as long as their tibiae, black from the tip of the first joint; first two joints taken together as long as the tibia, second three-fourths as long as first, third three-fourths as long as second, fourth half as long as third; first three joints slender, tip of third only slightly widened, last two compressed, fourth a little widened, fifth a little more so, widest near the tip, where it is scarcely half as wide as long; it is as long as the third; pulvilli white, rather conspicuous. Middle tarsi nearly one and a half times as long as their tibiae, black from the tip of the first joint, which has a large bristle above near apical third. Hind tarsi wholly black, a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 147) grayish, a little tinged with brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein rather sharply, but not greatly, bent before its middle; third vein bent backward a little near the tip; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent and extending a little toward the root of the wing; wing of somewhat equal width.

Described from 1 male taken at Hood River, Oregon, July 4, 1917, by F. R. Cole.

Type.—Male, Cat. No. 23038, U.S.N.M.

No. 148. DOLICHOPUS WALKERI, new species.

Male.—Length 4.5–5.5 mm.; of wing 4.5–5 mm. Face rather wide, a little narrowed below, yellowish. Front green with bronze reflections. First antennal joint yellow with the upper edge black; second and third black, the latter longer than wide, somewhat oval, a little pointed at tip. Proboscis black; palpi yellow. Lateral and inferior orbital cilia pale yellow, about six of the upper cilia on each side black.

Thorax green with bronze reffections; dorsum dulled with yellowish gray pollen, which becomes more gray along the front edge; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large, fully twice as long as wide, somewhat oval, white with wide black border on apical margin, jagged and bristly at apex, fringed above with little black hairs, below with a few pale hairs.

Fore coxae wholly yellow or nearly so, their anterior surface with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter not ciliated below. Posterior tibiae but little thicker than the others, not or scarcely at all infuscated at tip. Fore tarsi (fig. 148*a*) one and a fourth times as long as their tibiae; first three joints yellow, first about equal to the three following joints taken together, second joint three-fourths as long as first, third half as long as second or sometimes more, fourth black, about one-third as long as third, a little compressed, as wide as long, fifth joint black, compressed, a little longer than third, somewhat oval, nearly straight below, obliquely truncate at tip, the apex extending beyond the claws; pulvilli white, consipcuous. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above, their tibiae with three, sometimes four bristles below, one pair at apical third and one or two bristles before them. Hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 148) grayish; costa without an enlargement at tip of first vein; last section of fourth vein bent beyond its basal third; hind margin of wing not indented at tip of fifth vein; anal angle of wing prominent.

Female.—Nearly as in the male, except that the face is wider and grayish white; the fore tarsi are plain, a little longer than their tibiae, first joint as long as the remaining joints taken together, blackened from the tip of the first joint, still the second and third joints are a little yellowish at base.

Described from 7 males and 3 females. Five males and the 3 females were taken in Colorado, one of them at Longview, June 24, by E. C. Jackson; 1 male at Cloudcroft, New Mexico, June 17, 1902; and 1 male at Dauphin, Manitoba, July 22, by Dr. E. M. Walker, to whom the species is dedicated.

Type.—Male, Cat. No. 23039, U.S.N.M., from Colorado.

No. 149. DOLICHOPUS SPECIOSUS, new species.

Male.—Length 4 mm.; of wing 3.8 mm. Face rather wide, dark golden yellow. Front green, dulled with brownish pollen. Antennae black; lower half of first joint yellow; third joint nearly orbicular in outline, arista inserted near its base. Palpi small, yellowish. Lateral and inferior orbital cilia yellowish white, about eight of the upper cilia on each side black.

Thorax dark green, a little dulled with gray pollen, which is almost invisible on the dorsum and leaves a narrow median vitta more shining green. Abdomen dark green; the white pollen on its sides extending upon the dorsum. Hypopygium black; its lamellae rather large, oval, a little longer than wide, whitish with black border.

Fore coxae yellow with a blackish spot at base on outer side, anterior surface covered with little black hairs; middle and hind coxae black with their tips narrowly yellow. Femora and tibiae yellow. Middle and hind femora each with one not very large preapical bristle, the hind femora without cilia below, but with the little black hairs on inner surface extending to the lower edge. Posterior tibiae scarcely at all thickened, their tips black for about one-fifth their length, but this black not sharply limited and extending further towards the base on upper edge. Fore tarsi (fig. 149*a*) one and a fourth times as long as their tibiae, infuscated from the base, becoming darker apically, fourth and fifth joints black; second joint less than half, third a fourth as long as the first, fourth a little shorter than the third, a little compressed and widened, especially at tip; fifth joint compressed, about three-fourths as long as first, oval, about twice as long as wide, nearly straight below, fringed above with little black hairs. Middle tarsi a little longer than their tibiae, blackened almost from their base, still the first joint a little yellowish. Hind tarsi wholly black, about one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia. middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi with a large bristle at or near apical third of upper surface.

Wings grayish (fig. 149); costa with a small knotlike enlargement at the tip of first vein; last section of fourth vein bent before its middle; third vein only slightly bent backward at tip; hind margin of wing slightly indented at tip of fifth vein; anal angle prominent.

Described from 1 male taken on the top of the Las Vegas Range, New Mexico, June 28, 1902 (Cockerell); and one male taken at Geneva Park, Grant, Colorado, July 21, 1916 (E. C. Jackson), at an elevation of 10,000 feet.

Type.—Male, Cat. No. 23040, U.S.N.M., from New Mexico.

This is much like *walkeri*, but the joints of the fore tarsi are of different lengths, the wings have a small enlargement at tip of first vein and their hind margin is straighter, the first antennal joint is not distinctly black above, the fore coxae have a large blackish spot at base on outer side, and the hind tibiae are more blackened at tip.

No. 150. DOLICHOPUS PROCERUS, new species.

Male.—Length 4.5–5 mm.; of wing the same. Face rather wide, a little narrowed below, yellowish gray. Front green with coppery reflections, sometimes blue-green, rather shining. First antennal joint yellow, sometimes narrowly black on upper edge; second and third joints black, third one and a half times as long as wide, somewhat oval, usually a little pointed at tip. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax shining green, usually with a median coppery vitta on the dorsum, sometimes with blue reflections; pleurae dulled with white pollen. Abdomen green with bronze, coppery, or blue reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large, somewhat oval in outline, nearly twice as long as wide, whitish with a black border which is wide on apical, narrow on upper margin, a little jagged and bristly on lower apical corner, fringed above with little black hairs.

Fore coxae yellow with the extreme base a little blackened, their anterior surface with little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the hairs on their sides wholly black. Posterior tibiae slightly thickened, brownish toward the tip on inner side, hairs on inner surface longer and denser on apical half. Fore tarsi (fig. 150*a*) nearly one and three-fourths times as long as their tibiae; first three joints yellow, slender, first two of about equal length, third fully half as long as second, fourth a little compressed, black, about as wide as long, one-third as long as third; fifth joint black, compressed, somewhat round in outline, only a little longer than wide, as long as third joint, fringed above with little hairs; pulvilli white, conspicuous. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which has a large bristle above near apical fourth. Hind tarsi wholly black. Calypters and halteres yellow, the latter ciliated with black.

Wings (fig. 150) grayish; costa not thickened at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, with a slight sinus between the tips of fifth and sixth veins so as to form a broad but not conspicuous lobe at tip of sixth vein and the anal angle, which is prominent; wing of somewhat equal width.

Female.—Face wide, grayish; fore tarsi plain, a little longer than their tibiae, becoming black toward their tips, first joint nearly as long as the three following joints taken together, fifth joint a little longer than fourth; wings rather evenly rounded on the hind margin.

Described from many specimens. C. W. Metz took it at Sheridan, Wyoming, in July; C. F. Baker took it in Colorado; A. L. Melander took it at Kamiac Butte, Washington, and at Gardiner Valley, Montana, August 20, 1918.

Holotype and allotype in the United States National Museum taken in Colorado.

Type.—Male, Cat. No. 23041, U.S.N.M.

No. 151. DOLICHOPUS COMPLETUS, new species.

Male.—Length 5–6 mm.; of wing 5–5.5 mm. Face wide, a little narrowed below, yellowish gray, sometimes ocher yellow, more white below. Front green, dulled with gray pollen. First antennal joint yellow. sometimes a little brownish on upper edge; second and third joints black, the latter somewhat conical in outline, slightly longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia pale yellowish, about nine of the upper cilia on each side black.

Thorax bronze brown with more or less green reflections; dorsum dulled with thick yellowish gray pollen, which is always gray in the front and sometimes quite gray on the disk but usually decidedly yellowish: pleurae dulled with white pollen. Abdomen green with narrow black incisures; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black, its lamellae rather large, somewhat oval but narrowing into the stem, about twice as long as wide, white with a black border, which is wide on apical, narrow on upper margin, jagged and bristly on lower half of apical margin, fringed above with little black hairs, below with a few small brown hairs.

Fore coxae yellow, a little blackened at base, their anterior surface with little black hairs on apical two-thirds, which become minute and leave a nearly bare space below the black base. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with the little black hairs on their sides reaching the lower edge so as to leave scarcely a trace of the usual glabrous line on lower edge. Posterior tibiae sometimes a little infuscated at tip, only a little thicker than the others, the two rows of large bristles on upper surface are placed so close together that the usual glabrous stripe between them can scarcely be traced. Fore tarsi (fig. 151*a*) one and a third times as long as their tibiae; second joint about three-fourths as long as first; first four joints yellow, third scarcely one-third as long as second, fourth a little more than half as long as third, scarcely as long as wide, a little compressed; fifth black, much compressed, about as long as second, not quite as wide near the tip as it is long, fringed above with little black hairs. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above near apical fourth. Hind tarsi wholly black, sometimes the first joint is more dark reddish brown or even yellowish. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 151) grayish, tinged with yellowish brown in front of third vein and along the posterior veins; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing slightly indented at tip of fifth vein, with a small sinus before and after the tip of sixth vein so as to leave a slight lobe at tip of sixth vein and at the anal angle, which is prominent; wing of somewhat equal width, still a little narrowed at root.

Female.—Face wide, covered with gray pollen; fore tarsi plain, a little longer than their tibiae, infuscated almost to their base, but scarcely black even at tip, first joint scarcely longer than the two following taken together, fifth a little longer and wider than fourth; middle tibiae with four bristles below, one pair at apical third, one bristle at basal third, and one halfway between these; wings more evenly rounded than in the male, a little narrowed at root, anal angle a little prominent.

Described from 7 males and 4 females, taken by J. M. Aldrich, at Mono Lake, California, July 21–23.

Type.—Male, Cat. No. 23042. U.S.N.M.

No. 152. DOLICHOPUS ÆRATUS, new species.

Male.—Length 5–6 mm.; of wing 4.75–5 mm. Face wide, a little narrowed below, yellowish gray. Front mostly coppery with grayish pollen. First antennal joint yellow, sometimes with a blackish line on upper edge; second and third joints black, third about as long as wide, rounded at tip. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax bronze brown with a little green along the edges of the dorsum, which has coppery reflections and is covered with thick brownish pollen; pleurae dulled with grayish white pollen. Abdomen green with more or less coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae rather large, somewhat oval, about twice as long as wide, whitish with a black border, which is wide on apical, narrow on upper margin, jagged and bristly at apex, fringed above with little black hairs.

Fore coxae yellow, slightly blackened at extreme base, their anterior surface covered with conspicuous black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but the black hairs on the sides reach the lower edge. Posterior tibiae a very little thickened, more so on apical half where the hairs on inner surface are longer and denser, sometimes a little darkened on inner side toward the tip. Fore tarsi (fig. 152*a*) one and a half times as long as the tibiae, first two joints of equal length and taken together about as long as the tibia; first three joints yellow, third scarcely one fourth as along as second, fourth half as long as third, slightly widened, as wide as long, slightly brownish; fifth joint black, four-fifths as long as first, much compressed, somewhat oval, nearly as wide as long, fringed above with little black hairs; pulvilli white, conspicuous. Middle tarsi one and a third times as long as their tibiae, infuscated from the tip of the first joint, which has a large bristle above at apical fourth. Hind tarsi wholly black, still the first joint sometimes a little reddish. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 152) grayish, slightly tinged with yellowish brown in front of third vein; costa without an enlargement at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing slightly indented at tip of fifth vein, with a slight sinus each side of the tip of sixth vein, so as to form a slight lobe at tip of sixth vein, and at the anal angle, which is prominent: wings of rather parallel width.

Female.—Face wide with gray pollen; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint, but the extreme base of the three following joints yellowish, first joint equal in length to the three following joints taken together, third and fifth of about equal length, fourth a little shorter, but as thick as the others. Wings evenly rounded on the hind margin; anal angle rounded but rather prominent.

Described from six males and one female. Three males and the female were taken in Colorado, by Baker; two males at Dinwiddie Creek, Wyoming, September 5, 1895 (Wheeler); and one male at Laramie, Wyoming, August, 1893. All were in the collection of J. M. Aldrich.

Type.—Male, Cat. No. 23043, U.S.N.M., from Colorado.

The males of *æratus* and *procerus* have the first two joints of the fore tarsi equal in length, but in *procerus* the third joint is three-fourths as long as second and the wing has no sinus betweem the tip of sixth vein and the anal angle, while in *æratus* the third joint is only about one-fourth as long as second and there is quite a distinct sinus between the tip of sixth vein and the anal angle. *Æratus* agrees with *completus* in the form of the wing at the anal angle, but differs in having the first two joints of fore tarsi equal, while in *completus* the second is only three-fourths as long as first, the third is also longer in this, being half as long as second, while in *æratus* it is scarcely one-fourth as long as second. The female of *æratus* differs from that of *completus* in having the first joint of fore tarsi as long as the three following together, while in *completus* the first joint is scarcely as long as the two following together. The female of *procerus* differs from that of *completus* only in being more shining. It is also more shining than that of *æratus*.

No. 153. DOLICHOPUS SUFFLAVUS, new species.

Male.—Length 5 mm.; of wing the same. Face wide, a little narrowed below, yellow to grayish yellow. Front green, with bronze reflections. First antennal joint yellow; second and third joints black, the latter about as long as wide, somewhat orbicular in outline. Lateral and inferior orbital cilia pale yellow, about seven of the upper cilia on each side black.

Thorax dark green, usually with bronze reflections, which form two narrow vittae on the dorsum, the anterior portion of which is a little dulled with gray pollen; pleurae with grayish white pollen. Abdomen dark green with slight bronze reflections on the hind margins of the segments; the white pollen on its sides mostly confined to the lower edges. Hypopygium black; its lamellae rather large, somewhat oval, twice as long as wide, yellowish or yellowish brown, shading into a broad black border at apex, sometimes they are more whitish; they are jagged and bristly on apical margin, fringed above with little black hairs, below with pale hairs.

Fore coxae yellow, blackened a little at base, their anterior surface covered with black hairs, those along the outer edge unusually long. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the black hairs on the sides reaching the lower edge. Posterior tibiae slightly thickened, the glabrous stripe on upper surface rather broad but somewhat broken by little hairs. Fore tarsi (fig. 153*a*) nearly one and a third times as long as their tibiae, first joint longer than the three following taken together, with a row of minute bristles below, second joint about one-third as long as first, third and fourth together about as long as second, slightly widened, fourth shorter than third, scarcely as long as wide; first three joints yellow, still sometimes quite infuscated, fourth more or less black; fifth joint deep black, much compressed, a little shorter than first, not quite as wide as long, somewhat round in outline, fringed above with little black hairs. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which has a large bristle above. Hind tarsi wholly black. Calypters and halteres yellow.

Wings (fig. 153) grayish; costa not enlarged at tip of first vein; last section of fourth vein moderately bent near its middle; hind margin of wing a little indented at tip of fifth vein; slightly widened at tip of sixth vein so as to form a slight lobe; anal angle prominent; wing of rather equal width.

Female.—Face grayish, wide; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint, first joint about as long as the three following joints taken together, middle tarsi about as in the male, their basitarsi have the bristle at apical third; hind basitarsi yellowish on basal third or more; wings with the hind margin nearly evenly rounded; anal angle rounded.

Described from many males and females. J. M. Aldrich took it at Viola, Idaho, June 26; Moscow, Idaho, June 14–August 23; Juliaetta, Idaho, May 12; and Grangeville, Idaho, June 27. Baker took it in Colorado. A. L. Melander took it at Bovill, Idaho, June 17; Potlatch, Idaho, June 27; Troy, Idaho, June 14; Pullman, Washington, June 6–July 11; Palouse, Washington; Union Flat, Washington, June 6; Three Forks, Montana, August 1; Helena, Montana, August 6; Yellowstone Park, Canyon Camp, August 12. W. M. Mann took it at Nigger Hill, Powell County, Montana, in July.

Type.—Male, Cat. No. 23044, U.S.N.M. from Moscow, Idaho.

No. 154. DOLICHOPUS COLORADENSIS Aldrich.

Dolichopus agilis ALDRICH, Kansas Univ. Quart., vol. 2, p. 16, pl. 1, fig. 19; name changed on page 26.

The following is a copy of Aldrich's original description:

Antennae black, first joint yellow; cilia of inferior orbit pale, of tegulae black; legs yellow, hind tarsi wholly black.

Male.—Face yellowish gray; front shining green. Dorsum of thorax shining green; pleurae blackish, with gray dust. Abdomen shining green; hypopygium black, at base somewhat green or bronze. Lamellae light yellow, twice as long as wide, the black border wide at tip, which is a little jagged and has two or three crooked black bristles; upper margin smooth with short black hairs changing to yellow toward the base. Fore coxae yellow with minute black hairs in front; middle and hind coxae black, tipped with yellow. Femora and tibiae yellow, plain. Front tarsi [fig. 154] almost once and a half as long as the tibiae, first three joints slender, stalk like, yellow, second and third each more than half as long as the preceding; fourth very short, wider than long; fifth joint as long as the second, wide, black, with fringe of appressed black hairs above. Empodium a little enlarged, forming a snow-white plume reaching up half the width of the fifth joint, so the latter appears to have a white tip. Middle tarsi gently infuscated from the tip of the first joint. Wings with a grayish tint, the fourth vein running rather far forward toward its tip; costa not thickened.

Length 5 mm.; of wing 4.5 mm.; one male and two females. Colorado (U. K.)

At the last minute I have decided that a series described as new were really this species; the specimens were all from Colorado and the drawing was made from one of these specimens.

Type.—In the University of Kansas, from Colorado.

No. 155. DOLICHOPUS LOBATUS Loew.

Dolichopus lobatus Loew, Neue Beitr., vol. 8, 1861, p. 24; Mon. N. Amer. Dipt., pt. 2, 1864, p. 72.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 16, pl. 1, fig. 20.—Coquillett, Proc. Wash. Acad. Sci., vol. 2, 1900, p. 425.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 5.5–7 mm.; of wing 5–6 mm. Face rather wide, a little narrowed below, pale yellow, more white below. Front shining green with bronze reflections; first two antennal joints yellow; third black, somewhat oval, but little longer than wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax green with bronze, sometimes blue, reflections; dorsum often with a median coppery vitta, covered with an almost invisible yellowish gray pollen; pleurae dulled with white pollen. Abdomen green with bronze, sometimes violet, reflections; the white pollen on its sides abundant, reaching upon the dorsum. Hypopygium black, its lamellae rather large, somewhat oval in outline, twice as long as wide, white with a wide black border on the apical margin, which is jagged and bristly on the lower half, fringed above with black hairs.

Fore coxae yellow, their anterior surface covered with delicate yellow hairs, sometimes with a few minute black ones on inner edge; middle and hind coxae yellow with their outer surface more or less black. Femora and tibiae yellow, middle and hind femora each with one preapical bristle, the latter without cilia below, but with a row of delicate little yellow hairs on the lower inner edge. Posterior tibiae thickened, especially in the middle, sometimes a little darkened on apical half of inner side; the glabrous stripe on upper surface broad but broken by little hairs. Fore tarsi (fig. 155*a*) one and a third times as long as their tibiae, first three joints slender, yellow, sometimes a little infuscated from the tip of the first joint, fourth and fifth joints black; first joint as long as the three following joints taken together, second two-thirds as long as first, third half as long as second, fourth half as long as third, about as wide as long; fifth much compressed, longer than second, somewhat oval, about two thirds as wide as long, fringed above with black hairs; middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle above at apical third; hind tarsi wholly black. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 155) grayish, sometimes tinged a little with yellowish brown along the front; costa scarcely enlarged at tip of first vein;

last section of fourth vein a little bent near its middle; hind margin of wing a little indented at tip of fifth vein, deeply hollowed before the tip of sixth vein and again between the sixth vein and the ana angle, so as to form two prominent lobes, one at the tip of sixth vein and one at anal angle.

Female.—Face wide, silvery white; fore tarsi plain, infuscated from the tip of the first joint, which is about as long as the three following joints together; fifth longer than fourth; hairs on the anterior surface of the fore coxae yellow, as in the male; hind tibiae a little thicker than the others but not swollen in the middle as in the male; wings (fig. 155*b*) with hind margin rather evenly rounded. still with just a little lobe at tip of sixth vein.

Redescribed from many specimens from the following locations: Lafayette, Indiana, June 2–26; Brookings and Erwin, South Dakota (Aldrich), June; Agricultural College, Michigan; Milwaukee, Wisconsin, June 28 (Wheeler); Hagerman, Idaho, July 1 (Aldrich); Kamiac Butte, Washington (Melander); Chicago, Illinois, June 6; Colorado, Erie County, New York, June 9–24; Elba, New York, June 25; Olcott, New York, July 4; Dauphin, Manitoba, Canada, June 22; Ottawa, Canada, July 2. I have taken it in the following places in Ontario, Canada: Fort Erie, Ridgeway, Toronto, Bond Lake, Chatham, and Kearney, June 17–July 24.

Type locality.—English River, Canada. Aldrich reports it from South Dakota and Michigan; Coquillett from Kukak Bay, Alaska; Johnson, Insects of New Jersey, reports it from Delaware Water Gap, New Jersey, July 15.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 156. DOLICHOPUS OMNIVAGUS, new species.

Male.—Length 5.5–6.5 mm.; of wing, 5–5.5 mm. Face rather wide, golden yellow, a little more white below. Front green with bronze reflections. First antennal joint yellow, second partly, sometimes mostly, yellow, especially on inner side; third black, about as wide as long, somewhat triangular, pointed at tip. Lateral and inferior orbital cilia yellow, about six of the upper cilia on each side black.

Thorax green, usually with bronze reflections; pleurae dulled with white pollen. Abdomen green with bronze and blue reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large, about two and a half times as long as wide, somewhat elliptical, yellowish white with a rather wide black border on apical margin, which is jagged and bristly, fringed above with rather long brown hairs.

Fore coxae yellow, their anterior surface covered with little black and delicate yellow hairs; sometimes there are more yellow than black hairs and at other times only a few yellow ones. Middle and hind coxae yellow, more or less blackened on outer surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia, but with a row of minute pale hairs on lower inner edge. Posterior tibiae thickened, slightly more so beyond the middle, often darkened on inner side at tip. Fore tarsi (fig. 156) one and a half times as long as their tibiae, first two joints nearly as long as the tibia, slender, a little infuscated, second joint nearly as long as the first, third and fourth infuscated, third one-third as long as second, a little widened at tip, fourth a little more than half as long as third, as wide as long; fifth joint black, much compressed, nearly as wide as long, three-fourths as long as second, somewhat round in outline with a rounded emargination on apical margin below its middle, forming two lobes, the upper of which is much the largest. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, which has a large bristle above near apical third. Calypters and halteres yellow, the former with black cilia.

Wings gray, tinged with yellowish brown on front half; costa distinctly enlarged at tip of first vein, tapering to its tip; last section of fourth vein a little bent before its middle; hind margin of wing only slightly indented at tip of fifth vein, with a very prominent lobe at tip of sixth vein and another equally prominent at anal angle.

Female.—Face wide, gray; first antennal joint yellow, second and third black; fore tarsi plain, first joint slightly longer than the three following joints together, second scarcely half as long as first, fifth as long as third, fourth distinctly shorter, fore coxae with black hairs on the lower half of anterior surface; costa without enlargement, hind margin of wing without any trace of a lobe, anal angle prominent.

Described from 18 males and 1 female. Eight males were taken at Battle Creek, Michigan (Aldrich), 1 at Elm Grove, Wisconsin, July 4; 1 at Elba, New York, June 25; 2 at East Aurora, New York, June 15; 3, and 1 female at Three Forks, Montana, August, 1; 2 at Kearney, Ontario, July 7 and 28; 1 at Kukak Bay, Alaska, July 4,

Type.—Male, Cat. No. 23045, U.S.N.M., from East Aurora, New York.

Allotype in the collection of A. L. Melander taken at Three Forks, Montana.

No. 157. DOLICHOPUS AMPHERICUS Melander and Brues.

Dolichopus amphericus Melander and Brues, Biol. Bull., vol. 1, 1900, p. 146, fig.

Male.—Length 6 mm.; of wing 4.5 mm. Face wide, dark golden yellow. Front green. First antennal joint wholly yellow; second joint yellow on inner side, black on outer; third wholly black, about as long as wide, rounded at tip. Lateral and inferior orbital cilia yellowish, about four of the upper cilia on each side black.

Thorax green; dorsum dulled with gray pollen and with more or less coppery reflections, which forms somewhat of a median vitta; on each side at the suture is a bronze brown spot; pleurae dulled with white pollen. Abdomen green with coppery reflections, especially toward its tip; the white pollen on its sides abundant. Hypopygium black; its lamellae large, somewhat elliptical, but narrowed into the stem, about two and a half times as long as wide, being as long as the second joint of the hind tarsi, yellowish with rather wide black border on apical, and narrow border on upper margin, jagged and bristly at apex, closely fringed above with little black hairs.

Fore coxae wholly yellow, their anterior surface covered with little yellow hairs, usually with a few minute black ones on inner edge; middle and hind coxae black with yellow tips, the latter yellow on inner surface. Femora and tibiae yellow; middle and hind femora each with one preapical bristle, the latter without cilia below, but with a row of delicate little yellow hairs on the lower inner edge, on the outer surface the little black hairs descend nearly or quite to the lower edge. Posterior tibiae moderately thickened; the usual glabrous stripe on upper surface is broken up by the irregular placing of the large bristles and numerous little black hairs; fore tarsi (fig. 157) nearly one and a half times as long as their tibiae; the two first joints slender, thin, glabrous on the sides, with minute black hairs on upper and lower edges, taken together nearly as long as the tibia; second two-thirds as long as first, third short, about one-third as long as second; first three joints yellow, third sometimes with the tip black, the black more extensive on outer surface, which is sometimes mostly infuscated; it is slightly widened at tip; fourth joint black, about as wide as long, closely fringed above with black hairs; fifth joint black, compressed, about as long as third and fourth together, somewhat oval, but narrowed toward the base, fringed above with black hairs; last three joints taken together about as long as first, forming a somewhat elongate triangular tip to the tarsi, but broadly rounded at tip. Middle tarsi about one and a fourth times as long as their tibiae, blackened from the tip of the first joint, which has a large bristle above. Hind tarsi black, sometimes a little yellowish at base. Calypters and halteres yellow, the former with black cilia.

Wings grayish, tinged with yellowish in front; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent beyond its basal third; hind margin of wing only a little indented at tip of fifth vein, with a sinus between the tips of fifth and sixth veins, so as to form a slight lobe at tip of sixth vein, from which point the hind margin recedes to the anal angle, which is still rather prominent but narrow.

Female.—Face wide, yellowish gray; fore tarsi plain, only a little longer than their tibiae, yellow, slightly darkened from tip of first joint, still only blackened from the tip of third joint; wings nearly as in the male, except that there is no sinus on hind margin, but they recede from the tip of the sixth vein to the anal angle as in the male, so as to give a flattened appearance to the anal angle.

Redescribed from the type specimens in the American Museum, in New York City; they were taken in Price County, Wisconsin.

The following notes may help the student to separate the preceding group of species, some of which might be found difficult to determine with certainty: There are 10 species (*lobatus*, *omnivagus*, *amphericus*, *speciosus*, *procerus*, *æratus*, *walkeri*, *coloradensis*, *sufflavus*, *completus*), which resemble each other in having the first antennal joint yellow or mostly yellow, third wholly black; in the general form of the fore tarsi; in having the hind tibiae wholly yellow or nearly so, and the hind tarsi wholly black.

The first three of these have the second antennal joint yellow, at least on the inner side; *amphericus* has only the inner side of the second antennal joint yellow, it also differs from the other two in having the fifth joint of fore tarsi much smaller and not so round in outline; *lobatus* has the apical edge of the fifth joint of fore tarsi evenly rounded, while in *omnivagus* there is a conspicuous emargination near the lower corner. In *procerus* and *æratus* the first two joints of fore tarsi are of about equal length; in *walkeri* the second is three-fourths as long as first, in *completus* it is two-thirds as long, and in *coloradensis* it is more than half as long as first; in *speciosus* and *sufflavus* the second is distinctly less than half as long as first. In *procerus* the third joint of the fore tarsi is a little more than half as long as the second, while in *æratus* it is only about one-fourth as long as second; *completus* differs from *coloradensis* in having the third joint less than half as long as second, while in the latter it is more than half as long as second. In *speciosus* the second joint is about equal to the third in length, while in *sufflavus* the third is distinctly shorter than second. There are other points of difference but these should make the determination of these species sure.

No. 158. DOLICHOPUS AFFLICTUS Osten Sacken.

Hygroceleuthus afflictus OSTEN SACKEN, Western Diptera, 1877, p. 313.—WHEELER, Proc. Calif. Acad. Sci., vol. 2, 1899, p. 3.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 132.

Male.—Length 5–6 mm.; of wing 5–5.8 mm. Face wide, white. Front shining green. Antennae black; first joint rather long, yellow on lower half; with stiff black hairs above; third joint about as long as wide, pointed at tip. Lateral and inferior orbital cilia yellowish white, the black cilia not quite reaching down to the middle of the eye.

Thorax green with considerable gray pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum; the second segment has a bunch of long yellow hairs on each side, the tips of these hairs reach upon the fourth segment; the third segment also has a similar bunch of yellow hair, but it is much smaller and shorter. Hypopygium black; its lamellae (fig. 158*a*) of moderate size, whitish with a narrow black border on apical and upper margins, jagged and bristly at apex, fringed above with delicate white hairs.

Fore coxae yellow with a black or green streak on the outer posterior edge, inner edge of anterior surface with little black hairs. Middle and hind coxae black with yellow tips. Middle femora with one preapical bristle; hind ones with a row of bristles of increasing length, ending in the usual preapical bristle, without cilia below. Posterior tibiae thickened, a little compressed, with a shallow groove on each side, that on the inner side glabrous. Fore and middle tarsi stout, scarcely as long as their tibiae, infuscated from the tip of the first joint, still the joints sometimes a little yellow at base. Hind tarsi black from the tip of the first joint. Calypters, their cilia and the halteres yellow.

Wings (fig. 158) grayish; costa with an elongated enlargement at tip of first vein; last section of fourth vein rather sharply bent before its middle; hind margin of wing deeply indented at tip of fifth vein with a very slight sinus at tip of sixth vein; anal angle of wing prominent.

Female.—Face but little wider than that of the male; antennae slightly shorter; thorax, legs, feet, and wings about as in the male, except that the costa is not enlarged at tip of first vein; there are no tufts of yellow hair on the sides of the second and third abdominal segments.

Redescribed from many males and females. J. M. Aldrich has specimens from Brigham, Utah, July 4, 1911, taken on parsnip flowers; Monterey County, California, July 15 (Wheeler); Santa Clara County, California (Baker); Stanford University, California, Oct.; Socorro, New Mexico (S. W. Williston). I took it at Palo Alto, California, June 3; Berkeley, California, Oct. A. L. Melander took it at Stanford, California, June 30; Pullman, Washington, June 30. F. E. Snow took it in Cochise County, Arizona, Aug., at 3,750 feet elevation.

Type locality.—San Rafael, Marin County, California. Wheeler reports it from Arizona; Melander and Brues from Wyoming and Arizona.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 159. DOLICHOPUS CRENATUS Osten Sacken.

Hygroceleuthus crenatus Osten Sacken, Western Diptera, 1877, p. 312.—Aldrch, Kansas Univ. Quart., 1893, vol. 2, p. 24, pl. 1, figs. 27, 27*a*; American Naturalist, 1894, p. 35 (courtship).—Wheeler, Proc. Calif. Acad. Sci., vol. 2, 1899, p. 3, pl. 1, fig. 4.—Melander and Brues, Biol. Bull. vol. 1, 1900, p. 131, figs.

Male.—Length 5–6 mm.; of wing 4.5–5 mm. Face wide, of nearly equal width, silvery white; front shining green. Antennae (fig. 159*a*) black; first and second joints yellow on lower half, with a large smooth yellow protuberance on inner side; first joint very long and with stiff, long black hair; second and third of nearly equal length, taken together about as long as first; third scarcely longer than wide, pointed at tip; arista thick, clothed with long dense pubescence. Lateral and inferior orbital cilia yellowish, the lowest ones deeper yellow and slightly flattened; the black cilia descend below the upper third of the eye.

Thorax green with coppery reflections, which sometimes cover most of the dorsum. Abdomen green, usually with coppery reflections, its sides with white pollen. Hypopygium black; its lamellae of moderate size, oval, with a narrow black border on the apical margin; apex jagged and bristly, fringed above with black hairs, sometimes a few near the base yellowish.

Fore coxae yellow, with a green stripe on outer edge of its posterior side, their anterior surface with minute delicate white hairs and a few black ones along inner edge. Middle and hind coxae black with yellow tips; the trochanters usually with a brown spot. Femora and tibiae yellow. Middle femora each with one preapical bristle; hind pair with a row of bristles of increasing length, ending in the usual preapical bristle, without cilia below. Posterior tibiae a little thickened and compressed, with a shallow glabrous groove on inner side, the glabrous stripe on upper surface distinct, but broken by a few hairs. Fore and middle tarsi about as long as their tibiae, infuscated from the tip of the first joint; still the base of some of the other joints yellowish; first joint of fore tarsi as long as the remaining four taken together, fourth the shortest. Calypters, their cilia, and the halteres yellow.

Wings (fig. 159) grayish; broad, narrowed from the middle to the anal angle, which is still prominent; costa thick with a rather long knotlike enlargement at tip of first vein; last section of fourth vein considerably bent a little before its middle; hind margin of wing deeply indented at tip of fifth vein, which is bent backward near the middle of its last section almost at a right angle.

Female.—Face wide, grayish white; arista nearly as thick as in the male, but the antennae smaller; wings of nearly normal shape, without an enlargement of the costa, rather evenly rounded on hind margin, indented at tip of fifth vein; cilia of the calypters usually black. Middle tibiae with two bristles below, their basitarsi without a bristle above.

Redescribed from many males and females. J. M. Aldrich has specimens from Moscow, Idaho, Aug. 23, 24; Potlatch, Idaho, June 20; Viola and Juliaetta, Idaho; Corvallis, Oregon, Aug. 15; Beaver Creek, Newport, Oregon, Aug. 13. I have specimens from Berkeley, California, Sept. 16; Samoa Beach, Humboldt County, California, June 18. A. L. Melander has taken specimens at Pullman, Washington, June–Sept.; Tacoma, Washington, Aug. 27; Chehalis, Washington, Aug. 25; others are from Cochise County, Arizona, Aug. 3 (3,750 feet elevation); Claton, British Columbia, Aug. 9; Abbotsford, British Columbia, Aug. 9.

Type locality.—Sonoma County, California. Aldrich reports it from California and Washington; Wheeler from Idaho, Washington, Wyoming; Melander and Brues from California, Washington, Wyoming, Idaho, and Vancouver Island.

Type.—In the Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 160. DOLICHOPUS CONSANGUINEUS Wheeler.

Hygroceleuthus consanguineus WHEELER, Proc. Calif. Acad. Sci., vol. 2, 1899, p. 5, pl. 1, fig. 5–7.—MELANDER and BRUES, Biol. Bull., vol. 1, p. 131, figs.

Male.—Length 5.5–7 mm.; of wing 5–6 mm. Face wide, pale yellowish white, in some specimens the face has one or two ocher yellow longitudinal bands which are visible in certain lights only. Front dark shining green. Antennae black, with a large, smooth, yellow protuberance on inner side of first joint and a small one on second joint; first joint long with bristly hairs; third joint a little longer than wide, conical in outline; arista thick and densely pubescent. Orbital cilia black with 4–10 orange yellow cilia, from near the middle of the eye downward the lower cilia are much flattened.

Thorax dark shining green, with more or less bronze or coppery reflections; pleurae dulled with white pollen. Abdomen dark shining green with coppery reflections; and white pollen on its sides. Hypopygium mostly metallic green, like the abdomen; its lamellae of moderate size, oval, whitish, sometimes tinged with brown, with narrow black border along the apical edge, a little jagged and bristly at apex, fringed above with black hairs.

Fore coxae yellow with a broad green stripe on outer posterior edge, their anterior surface covered with black hairs, which are sometimes quite long. Middle and hind coxae black with narrow yellow tips. Femora and tibiae yellow. Middle femora with one preapical bristle; posterior pair with a row of bristles of increasing length, which ends in the usual preapical bristle. Posterior tibiae a little thickened and compressed, with a glabrous groove on inner surface; the usual glabrous stripe on upper surface quite distinct. Fore tarsi about as long as their tibiae, infuscated from the tip of the first joint, still the second and third joints sometimes yellowish at base; first joint about as long as the remaining four together; fourth joint shortest: middle tarsi scarcely as long as their tibiae, colored like the fore tarsi. Calypters and halteres yellow, the cilia of the former black.

Wings (fig. 160) strongly tinged with brown, sometimes more yellowish brown in front of second vein; costa with a knot-like enlargement at tip of first vein; last section of fourth vein sharply bent before its basal third, sometimes with a stump-vein at the posterior angle of this bend (this stump is present in most of the females I have seen); hind margin of wing deeply notched at tip of fifth vein, which is bent at a right angle near the middle between the cross-vein and the wing margin; wings broad, widest near the cross-vein, narrowing to the anal angle.

Female.—Face wide, usually dark gray, sometimes more whitish or yellowish, antennae smaller than those of the male; fore coxae with rather long and conspicuous black hairs on the anterior surface; hind tibiae normal; orbital cilia about as in the male, except that they are scarcely flattened at all; wings (fig. 160*a*) of nearly normal shape, rather broad and with the hind margin rather evenly rounded, the anal angle not at all prominent, deeply notched at tip of fifth vein, the bend in fourth vein more distant from the cross-vein than in the male, being about as far from it as the cross-vein is long.

Redescribed from 5 males and 8 females. J. M. Aldrich has specimens from Pine Lake, southern California, taken by Johnson; Pacific Grove, California, May 9, (Aldrich); Vollmer, Idaho, September 26, (Aldrich); Colorado, (Baker); E. P. Van Duzee took it at Tallac Lake, Tahoe, California, July 17, 1915.

Type locality.—Monterey, California. Melander and Brues report it from California.

No. 161. DOLICHOPUS BRUESI, new name.

Hygroceleuthus propinquus Melander and Brues, Biol. Bull., vol. 1, p. 131 (preoccupied).

The following is a copy of the original description of this form as they compared it with *consanguineus* Wheeler and which still covers most of the points of difference between them:

> Darker, all coxae piceous; femora piceous beneath near the base. Postocular cilia black, none of the orange colored cilia typical of *consanguineus* present, not so many of the infraorbital cilia flattened, lamellae of hypopygium darker.

All the above characters are more or less conspicuous in the specimens I have seen, but some have the fore coxae quite yellow on the anterior surface, others have them almost wholly greenish. Besides the characters given above I find in the specimens before me that the wings in both male and female are a little wider at the tip of sixth vein, making the anal angle a very little fuller, in the male making the sixth vein run a little more parallel with the margin of the wing; the bend in last section of fourth vein is also a very little farther from the cross-vein in *bruesi* (fig. 161) in both sexes, in the male it is at basal third not "before basal third," in the female of this form it is very near the middle of the last section, while in the female of *consanguineus* it is very near basal third.

The specimens before me were taken by Dr. J. M. Aldrich at Roche Harbor, Washington, July 3, 1905; Friday Harbor, Washington, July 5, 1905; and Keyport, Washington, August 7, 1905, and two specimens taken by Prof. A. L. Melander, one at San Francisco, California, Aug. 15; the other at Canyon Camp, Yellowstone Park, August 12, 1918.

As all of these specimens agree in the wing characters given above, as well as those given by Melander and Brues, I am inclined to give this form rank as a distinct species.

Zetterstedt described a species from Europe under the name of *propinquus* which still goes under that name, I therefore propose the name of *bruesi* for the present species.

Type locality.—Vancouver Island.

Type.—In American Museum of Natural History, New York City.

No. 162. DOLICHOPUS AURIFEX, new species.

Male.—Length, 5.5–6.5 mm.; of wing 5–6 mm. Face wide, whitish, tinged with yellow. Front green with bronze and coppery reflections. Antennae black; first joint long with long stiff hair and a large protuberance on inner side, which is largely yellow; second joint wholly black, or with just a trace of yellow on inner side; third wholly black, pointed at tip. Orbital cilia black above down to the middle of the eye, below this pale yellow, a little darker below, sometimes there are one or two black bristles next to the proboscis, none of the cilia flattened, although the lower ones are rather stout.

Thorax green with bronze reflections, which sometimes form two narrow vittae on the dorsum, anterior slope of the dorsum with two patches of white pollen and these patches clothed with black hairs, as in the allied species. Abdomen green with coppery reflections, and with white pollen on its sides. Hypopygium black, more or less greenish; its lamellae (fig. 162*a*) of moderate size, brownish with broad black apical border which shades into the brown of the disk, somewhat oval, jagged at tip, fringed all around with blackish hairs which are stoutest at apex, their disk clothed with minute hairs which are pale near the base, black at their tips.

Fore coxae yellow, more or less tinged with brown on outer side and with a green stripe on outer posterior edge. Middle and hind coxae black with narrow yellow tips. Trochanters with brown dots, posterior ones brown. Femora and tibiae yellow. Middle and hind femora each with a row of bristles of increasing size, ending in the usual preapical bristle, the latter almost bare below. Posterior tibiae a very little thickened and compressed, with a shallow glabrous groove on inner surface. Fore and middle tarsi about as long as their tibiae; first joint a little shorter than the remaining four taken together, fourth joint scarcely shorter than the fifth. Hind tarsi a little longer than their tibiae. All tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 162) grayish, brownish in front of third vein; costa stout with a knot-like enlargement at tip of first vein; last section of fourth vein rather sharply bent a little beyond its basal third; hind margin of wing notched at tip of fifth vein, which is sharply bent toward the wing margin; anal angle rounded; wing of normal shape, evenly rounded behind.

Female.—Face wider and antennae smaller than in the male; middle femora with one preapical bristle; wing as in the male, except that the costa is not enlarged at tip of first vein. Middle tibiae with two large bristles below, their basitarsi without a bristle above.

Described from 6 males and 4 females taken at Newport, Oregon, August 13, 1902, at seepage just above the sea beach, by J. M. Aldrich.

Type.—Male, Cat. No. 23046, U.S.N.M.

No. 163. DOLICHOPUS IDAHOENSIS Aldrich.

Hygroceleuthus idahoensis ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 154.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 133, figs.

Male.—Length 5–5.2 mm.; of wing 4.8–5 mm. Face rather wide, long, reaching the lower corner of the eye, silvery white; the yellow ground color shows through on the lower part, the ground color is probably more brown above. Front shining green. Antennae black; first joint of normal size, first and second yellow below; third joint about as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia silvery white, becoming flattened below, about ten of the upper cilia on each side black.

Thorax shining green, but slightly dulled with white pollen, sometimes with bronze reflections; pleurae with a little more white pollen than the dorsum. Abdomen green with coppery reflections on the hind margins of the segments, and large spots of white pollen on its sides. Hypopygium black, with green reflections; its lamellae of moderate size, somewhat oval, white with narrow black border on apical and upper margins, a little jagged and bristly at apex, fringed above with little black hairs.

Fore coxae yellow with a green stripe on outer posterior edge, anterior surface covered with silvery pollen and very minute white hairs, there are some little black hairs along inner edge. Middle and hind coxae black with yellow tips. Hind trochanters brown, the four anterior ones with a brown spot. Femora and tibiae yellow. Middle femora with one preapical bristle, the hind pair with a row of bristles of increasing size, ending in the usual preapical bristle, without cilia below. Posterior tibiae thickened and a little compressed, with a glabrous groove on inner side, the glabrous stripe on upper surface narrow but distinct. Fore tarsi about as long, middle ones scarcely as long as their tibiae, infuscated from the tip of the first joint, still the second joint often yellow at base; first joint of fore tarsi a little shorter than the remaining four taken together, the fourth slightly the shortest of all. Hind tarsi black from apical third of first joint. Calypters, their cilia and the halteres yellow.

Wings (fig. 168) grayish, sometimes narrowly a little brownish along the cross-vein; costa thickened at tip of first vein for a distance equal to one and one fourth times the length of the cross-vein, this thickening is truncate and provided with a little spur at apex; last section of fourth vein sharply bent before its middle; hind margin of wing notched at tip of fifth vein; and with a slight sinus at tip of sixth vein; anal angle rounded, but rather prominent.

Female.—Face wide, silvery; fore coxae clothed on their anterior surface with stiff black hairs; wings as in the male, except that there is scarcely a trace of the sinus at tip of sixth vein and the costa is not enlarged at tip of first vein.

Redescribed from 16 males and 8 females, which includes 10 type specimens; the 10 types are from Moscow, Idaho; the others were taken at Moscow, Idaho, September 12, 1908; Stanford University, California, October 7, 1905; these were taken by J. M. Aldrich. Baker took it in Santa Clara County, California, and in Colorado. S. J. Hunter at Rock River, Wyoming, July, 1913.

Types.—In collection of J. M. Aldrich.

No. 164. DOLICHOPUS CAVATUS, new species.

Male.—Length 5 mm.; of wing 4–4.5 mm. Face moderately wide, silvery white, tinged with yellow below the antennae. Front green with bronze reflections. Antennae black; first and second joints yellow below, first of normal size; third somewhat orbicular in outline, scarcely pointed at tip. Lateral and inferior orbital cilia white, the lower ones silvery and flattened, about fourteen of the upper cilia on each side black.

Thorax green with bronze reflections, and usually with a coppery spot on each side of the dorsum, which is dulled a little with yellowish pollen; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides is not conspicuous and has a yellowish tint. Hypopygium black; its lamellae (fig. 164*a*) of moderate size, somewhat oval in outline, but with edges somewhat parallel and rising rather abruptly from the stem at base, nearly one and a half times as long as wide, white with a rather narrow black border on apical margin, which is jagged and bristly. Fore coxae yellow with a greenish stripe on the outer posterior edge, their anterior surface covered with silvery pollen and very minute white hairs, with some black ones along inner side; there are also some black bristly hairs at base. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle femora with one preapical bristle; hind pair with a row of bristles of increasing length, ending in the usual preapical bristles. Posterior tibiae thickened and compressed, their inner surface with a glabrous groove, this groove is not exactly glabrous but is covered with very minute hairs; the lower posterior bristle at tip of middle tibiae is long and very slender and of a pale yellow color. Fore and middle tarsi about as long as their tibiae, black from the tip of the first joint; anterior pair with the first joint nearly as long as the remaining four taken together, third and fifth of equal length, fourth a little shorter. Hind tarsi black from the middle of the first joint, a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 164) grayish, slightly tinged with brown along the front and on the cross-vein; costa black and rather thick from the tip of the first vein, where there is a rather long knot-like enlargement; last section of fourth vein bent a little before its middle; hind margin of wing indented at tip of fifth vein, rather evenly rounded; anal angle rounded, but rather prominent.

Described from 4 males. Two were taken at Hood River, Oregon (Cole); 1 at Corvallis, Oregon; 1 at Sobre Vista, Sonoma County, California, June 29, 1910.

Type.—Male, Cat. No. 23047. U.S.N.M.

No. 165. DOLICHOPUS PENICILLATUS, new name.

Hygroceleuthus ciliatus Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 25, pl. 1, fig. 28 (preoccupied).—Wheeler, Proc. Calif. Acad. Sci., vol. 2, 1899, p. 3.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 133, figs.

Male.—Length, 4–5.5 mm.; of wing, 4.5–4.75 mm. Face rather wide and long, silvery below, strongly tinged with yellow above. Front shining green, with a trace of yellowish pollen on its sides. Antennae black; first joint yellow below, as long or longer than third joint; second joint with a yellow spot at base; third joint a little longer than wide, obtusely pointed at tip. Upper third of the orbital cilia black, lower two-thirds pale yellow.

Thorax green with bronze reflections, somewhat dulled with yellowish gray pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black with green reflections; its lamellae moderately large, somewhat subquadrate, but rounded at tip, nearly one and a half times as long as wide, yellowish white, with an apical black border, which is jagged and bristly, fringed above with hairs which are black on outer portion, white at base.

Fore coxae yellow with a green stripe on outer posterior edge, anterior surface clothed with delicate little white hairs; there are only a few little black hairs at extreme base of inner edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below. Posterior tibiae slightly thickened, usually blackish at tip for nearly one-fifth their length; the glabrous stripe on upper surface distinct and another glabrous line just inside of the inner row of large bristles. Middle tibiae with a row of three large bristles below, their basitarsi without a bristle above. Fore tarsi scarcely longer than their tibiae, black from the tip of the first joint, which is about as long as the three following joints together; fourth and fifth joints of about equal length. Middle tarsi a little shorter than their tibiae, black from the tip of the joint. Hind tarsi about one and a fourth times as long as their tibiae, deep black from the tip of the first joint, first joint yellow at base for about half its length, the black not sharply limited. Calypters and halteres yellow, the former with very long, dense, deep black cilia.

Wings (fig. 165) grayish, usually darker in front of third vein; costa scarcely enlarged at tip of fifth vein, still when viewed from in front there is a cylindrical thickening which begins before the tip of fifth vein and ends abruptly a short distance beyond the tip; it is not conspicuous; last section of fourth vein bent before the middle; third vein bent backward at tip; hind margin of wing indented at tip of fifth vein; anal angle prominent but rounded; costa and veins yellowish brown, the thickening of the costa blackish.

Female.—Face a little wider, shorter and more gray than in the male; antennae a little smaller; pollen of the dorsum of the thorax more gray; costa not at all enlarged at tip of first vein; cilia of the calypteres about as in the male.

Redescribed from about 25 specimens. J. M. Aldrich took it at Wells, Nevada, July 12, 1911; and in South Dakota. E. P. Van Duzee took it at San Diego, California, October 18, 1913. A. L. Melander took it at Yellowstone Park, Upper Geyser Basin, August 7, 1918; Moscow Mountain, Idaho, September 16, 1917; and at Gardiner, Montana, August 17, 1918.

Type.—In collection of J. M. Aldrich, from Custer, South Dakota.

No. 166. DOLICHOPUS MISELLUS Melander.

Dichopus misellus MELANDER, Canadian Entomologist, vol. 32, p. 136, fig. 11.

Male.—Length 4.5 mm.; of wing 3.5 mm. Face of moderate width, yellow; front purple, or perhaps blackish with reddish reflections. First antennal joint not unusually long, yellow below, black on upper half, second and third joint black (the second may be a little yellow below, but I can not be sure); third joint a little longer than wide. Lower orbital cilia yellowish white.

Thorax and abdomen green, the latter with coppery reflections. Hypopygium black; its lamellae (fig. 166) of moderate size, somewhat oval, or perhaps more subquadrate in outline, yellowish white, with narrow black border at apex, which is jagged and bristly.

Fore coxae yellow with black or greenish stripe on the posterior edge of outer side, anterior surface apparently nearly bare, with five or six black hairs at upper inner corner, hind femora with one preapical bristle. Hind tibiae very slightly darkened at tip. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is a little longer than the two following joints taken together, but not as long as the three following joints together; third and fifth joints of about equal length, fourth a little shorter. Calypters and halteres yellow, the former with long black cilia, which are not very numerous in the type.

Wings without what could be called an enlargement of the costa, but the costa with a very slight cylindrical thickening, which begins before the tip of the first vein and ends abruptly a short distance beyond the tip of that vein, this thickening is small and would not be so plainly seen if it were not blackish at tip and the costa more yellowish just beyond it.

Redescribed from the single type specimen in the American Museum in New York City.

This type specimen is in very poor condition (apparently always was), so it is difficult to decide with certainty whether this is *ciliatus* Aldrich or not, so I am letting the species stand for the present, and will add to my description of the type specimen that I saw the following points taken from original description:

Antennae lengthened, the joints subequal in length, first joint reddish below. Vertex violaceous with a cupreous tinge. Anterior face of front coxae dark yellow, sharply limited, without the usual coating of black hairs, but with a few pale ones. Hind tibiae with an elongate apical "dimple" and a narrow glabrous streak on the posterior face. Wings with the fourth vein obtusely but sharply bent, cross-vein distant less than twice its length from the tip of fifth vein.

Type location.—Little Wind River, Wyoming, September 2, 1895; and Natrona County, Wyoming, August 31, 1895, taken by Dr. W. M. Wheeler.

The only characters to separate this from *ciliatus*, as far as I can make out, are the violet front, the glabrous streak on posterior face, and possibly the less infuscated tip to the hind tibiae. The cilia of the calypters may be less dense and shorter, but I can not tell from the type.

The preceding group of seven species, although differing widely in some cases, have several striking characters in common. These forms are *idahoensis* Aldrich; *cavatus*, new species; *afflictus* Osten Sacken; *crenatus* Osten Sacken; *aurifex*, new species; *consanguineus* Wheeler, and *bruesi* Van Duzee. The characters which these have in common are: Fore coxae yellow, with a peculiar black or green stripe on outer edge of the posterior surface, which reaches nearly their entire length, and is rather wide above, tapering to a point below, rarely the green is more extensive. Fore tarsi plain, about as long as their tibia, with the first joint nearly as long as the remaining four joints taken together; fourth joint slightly shorter than any of the others; fore tarsi infuscated from the tip of the first joint. Fore and middle trochanters with a brown dot, hind ones wholly brown. Hind femora without cilia below, but with a row of bristles of increasing length, ending in the usual preapical bristle. Middle tibiae with two large bristles below, their basitarsi without a bristle above. Hind tibiae a little thickened and compressed and with a shallow groove on inner surface, which appears to be glabrous. Wings with the costa more or less thickened at tip of first vein.

Of the characters that separate the species the most striking is the form of antennae. In all but the two first the first joint is long and furnished with long stiff hairs or bristles, being typical of the group which was included in the genus *Hygroceleuthus;* the first three have the antennae of the usual form, typical of the genus *Dolichopus* as it used to be restricted; of the two first *cavatus* has the cilia of the calypters black, while in *idahoensis* they are pale. *Afflictus* is easily separated from the remaining five species by the tufts of long yellow hair on the sides of the second abdominal segment. Of the remaining four forms the cilia of the calypters are pale in the male of *crenatus*, black in the others. Of these three species *bruesi* has the orbital cilia wholly black; in *consanguineus* there are from four to ten orange-colored cilia on the side with black cilia above and below; while in *aurifex* the lower orbital cilia are pale yellow. The form of the wings also furnish good characters for separating these species.

No. 167. DOLICHOPUS CHRYSOSTOMA Loew.

Dolichopus chrysostoma LOEW, Mon. N. Amer. Dipt., pt. 2, 1864, p. 67.

Male.—Length 3–4 mm.; of wing 3.5 mm. Face narrow, yellowish white, in the type darker, almost golden yellow. Front shining green. Antennae (fig. 167) wholly black, third joint about twice as long as wide, with an acute point at tip, arista inserted at middle of third joint. Lower orbital cilia pale, a few of the upper cilia black.

Thorax green with a coppery spot on each side of the dorsum in front of the transverse suture; front slope of the dorsum with a little white pollen. Abdomen dark green or blackish green, with coppery reflections. Hypopygium black; its lamellae of moderate size, somewhat orbicular in outline, or perhaps they might be called triangular with rounded apex; whitish with wide black border on the margin of their apical half, a little jagged and bristly at apex.

Fore coxae yellow, a little infuscated at extreme base, with minute black hairs on the anterior surface. Middle and hind coxae black with yellow tips, posterior pair mostly yellow except on outer surface. Femora and tibiae yellow. Middle and hind femora with one preapical bristle, the latter without cilia below, still with a fringe of minute yellow hairs on lower inner edge. Posterior tibiae with the usual glabrous stripe on upper surface very indistinct and narrow. Fore tarsi scarcely one and a fourth times as long as their tibiae, yellow, only a little infuscated at tip. Middle tarsi fully one and a fourth times as long as their tibiae; first two joints yellowish with brown tips, remaining joints dark brown, still the base of the third paler. Hind tarsi blackish from the tip of the first joint, which is mostly pale yellow, still the base of the second is quite yellowish. Calypters and halteres yellow, the former with black cilia.

Wings grayish; of rather equal width; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent at a point slightly beyond its basal third; tips of third and fourth veins rather widely separated, still the third bent backward; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Redescribed from the type specimen, and 1 male in the United States National Museum collection, taken at Beverly, Massachusetts, July 21, 1869.

Type locality.—Washington, District of Columbia.

No. 168. DOLICHOPUS PARVICORNIS, new species.

Male.—Length 3 mm.; of wing 2.5 mm. Face moderately wide, silvery white. Front shining blue green. Antennae wholly black, or possibly a little yellowish on lower edge; third joint a little longer than wide, oval, rounded at tip, lateral and inferior orbital cilia yellowish white, about five of the upper cilia on each side black.

Thorax and abdomen dark blue-green, the latter with bronze reflections, and thin white pollen on its sides. Hypopygium black, its lamellae of moderate size, somewhat oval, but narrowing into the stem, about twice as long as wide, whitish with a narrow black border on upper and apical margins, jagged and bristly at lower apical corner, otherwise fringed on apical and upper edges with delicate little brown hairs.

Fore coxae wholly yellow, their anterior surface with minute white hairs. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, still with a row of very minute yellow hairs on lower inner edge. Hind tibiae scarcely thicker than the others, a very little brownish at tip. Fore and middle tasi about one and one third times as long as their tibiae, the former yellow with the last two joints blackish, first joint as long as the three following joints taken together, third and fifth of about equal length, fourth but little more than half as long as third. Middle tibiae with a pair of rather small bristles below at apical third, their tarsi black from the tip of the first joint, which has a very small bristle above near apical third. Hind tarsi slender, black from the tip of the first joint, which is brownish yellow. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 168) narrow, a little grayish; costa not enlarged at tip of fifth vein; last section of fourth vein a little bent before its middle; third vein bent backward a little at tip; hind margin of wing not indented at tip of fifth vein, evenly rounded; anal angle obsolete, the wing being narrow at root.

Described from 1 male which I took at Kearney, Ontario, July 2, 1909.

Type.—Male, Cat. No. 23048, U.S.N.M.

No. 169. DOLICHOPUS LATRONIS, new species.

Male.—Length 4 mm.; of wing the same. Face wide, narrowed a little below. Front shining green. Antennae black; first joint yellow below for half its width or more; third joint but little longer than wide, somewhat rounded at tip. Lateral and inferior orbital cilia yellowish white, about six of the upper cilia on each side black.

Thorax green; dorsum a little dulled with gray pollen, which is rather thick along the front; pleurae dulled with white pollen. Abdomen green with coppery reflections on the last two segments; the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 169*a*) rather large, somewhat subquadrate in outline, whitish with narrow black border on apical margin, which extends a little way on the lower edge and ends abruptly; it also extends narrowly along the upper edge, jagged and bristly at apex, fringed above with delicate but rather long brown hairs.

Fore coxae yellow with a small brown spot on outer side at base, anterior surface with white pollen and a few little black hairs, which are mostly on inner half; middle tarsi black with yellow tips; hind coxae yellow, blackish on most of the outer surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with a row of delicate little yellow hairs on lower inner edge, which are not long enough to call cilia. Middle tibiae with one large bristle below. Posterior tibiae scarcely thickened, very slightly brownish on inner side at tip; they have a glabrous stripe on inner surface just inside of the inner row of large bristles; it is widest near the base and does not reach base or tip. Fore tarsi one and a fourth, middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint; fore tarsi with the first joint longer than the following two taken together, fourth and fifth of equal length; middle basitarsi without a bristle above. Hind tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 169) a little grayish; costa a little thickened at tip of first vein, gradually tapering; last section of fourth vein bent beyond basal third; in one specimen the cross vein has a stump vein at its middle; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being rounded but rather prominent.

Described from 2 males taken at Hopedale, Labrador, by Prof. A. S. Packard.

Type.—In the Museum of Comparative Zoology at Cambridge, Massachusetts.

No. 170. DOLICHOPUS HARBECKI, new species.

Male.—Length 4.5–5.5 mm.; of wing the same. Face rather narrow and long, silvery, with a yellowish tinge. Front green with grayish pollen. Antennae (fig. 170*b*) black; first joint yellow on the lower half; third nearly round in outline, slightly pointed at tip. Lateral and inferior orbital cilia white, about six of the upper cilia on each side black.

Thorax green with slight bronze reflections; dorsum with thick gray pollen along the front, which is usually sharply limited, all the upper portion being covered with almost invisible brown pollen; the large bristles are inserted in minute brown dots; pleurae dulled with grayish pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant. Hypopygium black; its lamellae of moderate size, somewhat triangular, yellowish white with a black border on the apical margin, jagged and bristly on lower half of the apical edge, the upper half being fringed with slender brown hairs, the upper and lower edges with minute pale hairs; there is a pair of inner appendages which are more conspicuous than usual; they have a rather large, triangular, brown tip.

Fore coxae yellow, with the extreme base on outer side brown; their anterior surface with silvery pollen and minute yellow hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow, each with one preapical bristle, the latter without cilia below, still with a row of delicate little yellow hairs on lower inner edge. Posterior tibiae not thickened, the usual glabrous stripe on upper surface broken up by little hairs, but inside of the inner row of large bristles is a glabrous stripe, widest near the base and reaching nearly to the tip. Middle tibiae with one bristle below, their basitarsi without a bristle above. Fore tarsi scarcely one and a fourth times as long as their tibiae, first joint a little longer than the three following joints taken together, fourth and fifth of nearly equal length. Middle and hind tarsi about one and one-third times as long as their tibiae; all tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 170) grayish, with a conspicuous brown spot near the tip, extending from the costa back of the fourth vein and from the bend in the fourth vein to the apex of the wing; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein a little bent beyond its basal third; wings long and narrow, of somewhat equal width, narrowest at tip of fifth vein, where there is a small sinus; between the fifth and sixth veins the hind margin has an outward swell; anal angle prominent, with a lobe extending toward the root of the wing; hind margin fringed with conspicuous but very delicate hairs.

Female.—Face wide, silvery white; legs and tarsi as in the male, except that the glabrous stripe on upper surface is more distinct, but the one on inner surface is wanting; wings (fig. 170*a*) without a brown spot, of normal form, rather evenly rounded behind, scarcely indented at tip of fifth vein; costa without an enlargement; anal angle rounded, rather prominent.

Described from 8 males and 2 females. J. M. Aldrich has 1 pair taken at Franconia, New Hampshire, and 1 male from Roxborough, Pennsylvania (Harbeck), June 7. The United States National Museum has 1 male from the White Mountains, New Hampshire. Mr. N. Banks took 1 at North Fork, Swannanoa, Black Mountains, North Carolina, May. C. W. Johnson took it at Mount Washington, New Hampshire, July 21; Glen House, New Hampshire, July 23; Mount Greylock, Massachusetts, July 25; and 1 female at Capens, Maine, July 16.

Type.—Male, Cat. No. 23049, U.S.N.M., from Roxborough, Pennsylvania.

No. 171. DOLICHOPUS SLOSSONAE, new species.

Male.—Length 4.5–5.5 mm.; of wing the same. Face rather wide, a little narrowed below, ocher yellow, more white below in some specimens. Front green. Antennae black; first joint yellow below; third joint somewhat orbicular, but slightly pointed at tip. Lateral and inferior orbital cilia whitish, from 8 to 12 of the upper cilia on each side black.

Thorax green with slight bronze reflections; dorsum with rather abundant gray pollen along the front, which is quite sharply marked posteriorly, the disk being covered with an almost invisible brown pollen; the large bristles are inserted in little black dots; pleurae dulled with a little gray pollen. Abdomen green, sometimes with coppery reflections; the white pollen on its sides not very abundant. Hypopygium black; its lamellae (fig. 171*a*) rather large, somewhat triangular, white with a narrow apical black border, jagged and bristly on apical margin, fringed with brown hairs on the rounded upper apical corner.

Fore coxae yellow, their anterior surface covered with minute black hairs, which are mixed with some yellow ones. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with a row of rather conspicuous, very delicate, little yellow hairs on lower inner edge. Posterior tibiae scarcely thickened; the usual glabrous stripe on upper side narrow and broken, but there is another one on inner surface just inside of the inner row of large bristles; it is wide at base and extends nearly to the tip. Fore and middle tarsi about one and a third, hind tarsi one and a half times as long as their tibiae, black from the tip of the first joint; first joint of fore tarsi a little longer than the three following joints taken together, fifth shorter than fourth; middle basitarsi without a bristle above, their tibiae with one large bristle below. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 171) grayish, tinged with brown along the front, usually only slightly so; costa with a small knotlike enlargement at tip of first vein; last section of fourth vein bent beyond its basal third; wings rather narrow and of nearly parallel width; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Female.—Face wide, silvery white; wings more evenly rounded on the hind margin, still not very wide; anal angle prominent.

Described from 7 males and 1 female. J. M. Aldrich has 4 males and 1 female, taken at Franconia, New Hampshire, by Mrs. Annie Trumbull Slosson. I took 1 male at Colden, Erie County, New York, July 12. C. W. Johnson took 2 males, 1 at Mount Ascutney, Vermont, July 11, and 1 at Eastport, Maine, July 15.

Type.—Male, Cat. No. 23050, U.S.N.M., from Franconia, New Hampshire.

The form of the wing in this species is very much like that of *harbecki* but the anal angle has not the lobe extending toward the root of the wing as in that species, nor does it have the sinus at tip of fifth vein; it also lacks the black spot at tip of wing. The pollen on the dorsum of the thorax is about the same in both species, the feet differ a little.

No. 172. DOLICHOPUS VIRGINIENSIS, new species.

Male.—Length 4.7 mm.; of wing 4.5 mm. Face moderately wide, golden yellow, paler below. Front green, dulled with gray pollen. Antennae black; first joint yellow below; third joint about as long as wide, somewhat conical in outline, obtusely pointed at tip. Lateral and inferior orbital cilia whitish, about five of the upper cilia black.

Thorax green with bronze reflections, which sometimes form a median vitta on the dorsum, which has gray pollen that is most conspicuous in front; pleurae dulled with whitish pollen. Abdomen green with reddish coppery reflections; the white pollen on its sides abundant. Hypopygium black; its lamellae of moderate size, somewhat triangular, a little rounded at apex, whitish with rather narrow black apical border, jagged and bristly at lower corner, otherwise the apical margin is fringed with black hairs.

Fore coxae yellow, with minute yellow hairs on the anterior surface. Middle and hind coxae black with yellow tips. Femora and tibiae yellow, middle and hind femora each with one preapical bristle, the latter without cilia below, nearly bare on lower half, where there are only some very delicate yellow hairs. Posterior tibiae a very little thickened, especially near the base, where there is a little hollow on inner surface, which is glabrous for the entire width at this point, the glabrous part tapering toward the tip of the tibiae and ending a little beyond its middle. Fore and middle tarsi one and one-fourth times as long as their tibiae; fore tarsi wholly yellow, the fifth joint being the palest and about as long as the fourth, first joint as long as the three following taken together, middle tarsi yellow, a very little darker from the tip of the first joint. Hind tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 172) rather evenly tinged with brown, but not dark; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent beyond its basal third; rather widely separated from and nearly parallel with third vein; hind margin of wing not indented at tip of fifth vein; between the tips of fifth and sixth veins there is a shallow sinus and another between tip of sixth vein and the anal angle, forming two small lobes, one at tip of sixth vein and one at the anal angle, which is produced toward the root of the wing.

Described from 2 males taken by C. T. Greene at Great Falls, Virginia, June 27, 1915.

Type.—Male, Cat. No. 23051, U.S.N.M.

This species is very much like both *slossonae* and *harbecki* in the form of the wing.

No. 173. DOLICHOPUS BAKERI Cole.

Dolichopus bakeri Cole, Pomona College Journal of Entomology and Zoology, vol. 4, 1912, p. 839.

Male.—Length 3.75–4.75 mm.; of wing 3.75–4.5 mm. Face wide and short, white, tinged with yellow just below the antennae. Front purple, narrowly green above the antennae and along the orbits, sometimes mostly green. Antennae wholly black; third joint somewhat oval, a little longer than wide, pointed at tip. Lateral and inferior orbital cilia pale yellow, about seven of the upper cilia on each side black.

Thorax green with coppery reflections, sometimes more bronze brown; pleurae dulled with white pollen. Abdomen green with coppery reflections, the apical segments mostly coppery. Hypopygium black with coppery reflections; its lamellae (fig. 173*a*) rather large, somewhat triangular, but a little rounded at apical edge, whitish with a black border on apical margin, jagged and bristly at apex.

Fore coxae yellow, a little blackened at base on outer side, anterior surface with conspicuous little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with two preapical bristles, the latter ciliated on lower inner edge with long, delicate, yellow hairs, the longest of which are a little longer than the width of the femora. Posterior tibiae thickened and a little compressed, the usual glabrous stripe on upper edge distinct, inner surface also with a glabrous stripe for about one-third their length. Fore and middle tarsi a little longer than their tibiae, hind tarsi one and a third times as long as their tibiae; all tarsi black from the tip of the first joint; first joint of fore tarsi scarcely as long as the remaining four joints taken together; middle basitarsi about as long as the two following joints together, without a bristle above, their tibiae with one long bristle below. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 173) grayish; costa with a small enlargement at tip of first vein, gradually tapering; last section of fourth vein a little bent just before its middle; third vein nearly straight; hind margin of wing a little indented at tip of fifth vein; anal angle prominent.

Female.—Very much like the male in color, form of antennae, preapical bristles, and form of wings and tarsi; the face is wide, hind femora without cilia, but with a row of rather short, delicate, yellow, closely placed hairs on lower inner edge; the costa is not enlarged at tip of fifth vein; the anal angle is not quite so prominent as in the male.

Redescribed from 4 males and 5 females taken at Socorro, New Mexico, by S. W. Williston, all in the collection of J. M. Aldrich; 1 male taken by E. P. Van Duzee at Santa Cruz, Island, California; 1 male taken at Salt Lake, Utah, June 26, by H. S. Barber and in the United States National Museum; and 1 I took at Fresno, California, May 6, 1915. T. N. Willing took a female at Point Albert, Regina, June 19, 1905.

[The type, a female from Laguna, California, in the collection of the Department of Zoology, Pomona College, was sent me for examination, and from characters then noted I identified the Socorro material.—J. M. A.]

No. 174. DOLICHOPUS AURIFACIES Aldrich.

Dolichopus aurifacies Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 20.

Male.—Length 4.8 mm.; of wing 4 mm. Face moderately wide, narrowed below, golden yellow. Front shining green or blue-green. Antennae (fig. 174*a*) yellow; first joint rather slender; third a little longer than wide, conical in outline, pointed at tip, which is more or less infuscated; arista longer than the antennae, black, its first joint unusually long, about one-fourth of its entire length. Lateral and inferior orbital cilia yellowish, only two or three of the upper cilia on each side black.

Thorax green; dorsum dulled a little with coarse brown pollen, with a small coppery spot on each side at the suture; pleurae dulled with a little yellowish gray pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; with green reflections on basal portion; its lamellae (fig. 174*b*) large and inserted near apical third, somewhat elliptical in outline, but narrowed into the stem, whitish with a narrow black border on upper and apical margins, and with numerous brown dots on the disk, jagged and bristly at apex, fringed above with delicate short brown hairs, below with a few pale hairs.

Coxae yellow, middle pair with two blackish spots on outer surface; fore coxae with minute yellowish hairs on the anterior surface. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Posterior tibiae thickened; the usual glabrous stripe on upper surface distinct but does not reach the tip, being terminated by the uniting of the two rows of large bristles, inner surface with another glabrous stripe, which is wide at base, narrow at tip, reaching the entire length of the tibia. Middle tibiae with one large bristle below, their basitarsi without a bristle above. Fore tarsi one and a half times as long as their tibiae, yellow, darkened toward their tips, last two joints, black; first joint about as long as second and third taken together, fourth and fifth of about equal length. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, still the second paler at base. Hind tarsi one and a third times as long as their tibiae, blackened from the middle of the first joint, which has three large bristles on upper surface.

Wings (fig. 179) short, grayish; costa with a very small knot-like enlargement at tip of first vein; last section of fourth vein bent at its basal third; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded; anal angle rounded but rather prominent.

Female.—The type female has the face wide, almost silvery white, a little tinged with yellow on upper portion; third antennal joint a little longer and more pointed than in the male; wings a littler wider, bend of fourth vein a little farther from the cross-vein, anal angle a little more prominent, and third vein almost straight, in the male the third vein is bent backward at tip a little; costa without an enlargement.

Redescribed from the type material in the collection of J. M. Aldrich, 3 males and 1 female, 2 males and the female were taken at Knoxville, Tennessee, May 17, 1891 (H. E. Summers), the other male was taken at Lawrence, Kansas, by J. M. Aldrich; and 1 male from the collection of J. S. Hine taken by Bridwell, at Baldwin, Kansas, June.

The point of insertion of the hypopygial lamellae is rather unusual, as is also the long first joint of the arista.

No. 175. DOLICHOPUS CAROLINENSIS, new speies.

Male.—Length 5.5 mm. Face wide, narrowed below, almost ocher yellow. Front dark shining green. First two antennal joints yellow, second small; third joint black, broad, somewhat orbicular, still pointed at tip. Lower orbital cilia yellow, those of upper half black.

Thorax green; dorsum with the sides and a median line bronze-brown, a little dulled with gray pollen; pleurae more blackish with gray pollen. Abdomen green with wide black incisures; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 175*a*) of moderate size, somewhat oval, about one and a half times as long as wide, whitish with narrow black border on upper and apical margins, jagged and bristly at apex, fringed above with rather long black hairs.

Fore coxae yellow, with a small black spot at base on outer side, anterior surface with silvery pollen and little black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Posterior tibiae but little thickened, more so at tip and on inner side just before the middle; blackish at tip on inner side, also with a slight brownish shade at base on upper side and on inner side where the swelling is near the middle; the usual glabrous stripe on upper surface distinct, but broken by little hairs. All tarsi black from the tip of the first joint; fore and middle ones a little longer than their tibiae, the former with the first joint about as long as the remaining four taken together. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 175) grayish, with a slight brown tinge in front of third vein, costa scarcely enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing quite deeply notched at tip of fifth vein, and with a conspicuous sinus between the tip of fifth and sixth veins, leaving a small lobe back of fifth vein; although the anal angle is prominent there is scarcely what could be called a lobe at tip of sixth vein.

Female.—Face wide, grayish white; the body color is more bronze-brown than green; wings (fig. 175*b*) without the slightest enlargement of the costa at the tip of the first vein; their hind margin not quite so deeply notched at tip of fifth vein, although considerably so, and without sinus; the anal angle is rounded off, not at all prominent, the hind margin being evenly rounded. Middle tibiae with a row of four large bristles below, one of which is a little to one side of the line of the others, their basitarsi without a bristle above.

Described from 1 pair taken at Southern Pines, North Carolina, May 1, 1912, by A. H. Manee.

Type and allotype.—In the collection of Mr. Nathan Banks, Cambridge, Massachusetts.

This is much like *fulvipes* Loew, but the wing has a deep notch at tip of fifth vein, in *fulvipes* there is only a small notch, and the sinus is much deeper between the tips of fifth and sixth veins, leaving a distinct lobe at tip of sixth vein, while in *carolinensis* there is no lobe at that point but a small one just back of fifth vein caused by the deep notch at fifth vein.

No. 176. DOLICHOPUS IMPERFECTUS, new species.

Male.—Length 4.7 mm.; of wing 5 mm. Face rather narrow with parallel sides, reaching nearly to the lower corner of the eye, rounded on lower edge, silvery white, only a little yellowish just below the antennae. Front dark shining green. First two antennal joints yellow, first joint rather long with conspicuous black hairs (third joint missing). Lateral and inferior orbital cilia whitish, about six of the upper cilia on each side black.

Thorax dark shining green with bronze and blue reflections and with a coppery spot on each side at the suture; pleurae dulled with gray pollen. Abdomen green with bronze reflections; the white pollen on its sides rather thin. Hypopygium (fig. 176) black, very small, tipped with what appears to be the rudiments of lamellae, which are whitish in color.

Coxae yellow, outer surface of middle and hind ones blackened; fore coxae covered on their anterior surface with silvery pollen, with a few black hairs along the inner edge and a few longer ones at base, the usual bristles at tip. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below. Posterior tibiae a little thickened; the usual glabrous stripe on upper surface distinct, but conspicuous only for half the length of the tibiae, their tips slightly brownish. Fore tarsi rather stout, about as long as their tibiae, black from the tip of the first joint, still the second joint yellowish; first joint as long as the three following taken together. Middle tibiae with two bristles below, their basitarsi narrowly black at tip, without a bristle above. Hind tarsi black with the first joint yellowish on basal two-thirds and with two large bristles above. Calypteres and halteres yellow, the former with black cilia.

Wings (fig. 176*a*) grayish; costa with an elongated enlargement at tip of first vein; last section of fourth vein a little bent just before its middle; hind margin of wing a little indented at tip of fifth vein; anal angle rounded, not prominent.

Described from 1 male taken at Calumet, Illinois, in July, by E. P. Van Duzee.

Type.—Male, Cat. No. 23052, U.S.N.M.

No. 177. DOLICHOPUS VITTATUS Loew.

Dolichopus vittatus Loew, Neue Beitr., vol. 8, 1861, p. 20; Mon. N. Amer. Dipt., pt. 2, 1864, p. 55.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5–6 mm.; of wing 5–5.5 mm. Face rather wide, silvery white, more or less tinged with yellow on upper portion. Front shining green, often largely blue or violet. Antennae yellow; third joint more or less brown at tip, a little longer than wide, rather pointed at tip. Lateral and inferior orbital cilia yellowish white, about five of the upper cilia on each side black.

Thorax green with sharply defined median, and wider, less distinct lateral vittae on the dorsum; often with blue or violet reflections, sometimes almost wholly violet on the dorsum; the vittae are usually coppery in color but sometimes they are more bronze or golden, in specimens with the dorsum violet they may be shining green with scarcely a trace of bronze; anterior portion of the dorsum a little dulled with gray pollen; pleurae dulled with whitish pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black with metallic reflections; its lamellae (fig. 177*a*) rather small, somewhat elliptical, one and a half times as long as wide, white with a black border on apical and upper margins, that above very narrow, jagged and bristly at apex, fringed above with a few rather stiff short black hairs.

Coxae yellow, middle ones blackened on outer surface; fore coxae with minute black hairs along inner edge, anterior surface with silvery pollen and little white hairs, sometimes there are a few black ones intermixed. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below but with a row of very delicate little yellow hairs on lower inner edge. Posterior tibiae a little thickened, their inner surface glabrous from near the base nearly to apical fourth. Fore and middle tarsi about one and a fourth times as long as their tibiae, middle ones black from the tip of the first joint, anterior ones from the middle of third joint; first joint of fore tarsi about as long as the following three taken together, fourth and fifth of nearly equal length. Middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi with one large bristle near apical third of upper side. Hind tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 177) grayish, usually tinged with brownish in front of third vein; costa with a conspicuous elongated enlargement at tip of first vein; tip of third vein bent backward a little; last section of fourth vein bent at right angles near its middle, the bend having a stump of a vein at its first angle and sometimes also one at its upper angle, the vein running nearly straight from upper angle to its tip; hind margin of wing only a little indented at tip of fifth vein; anal angle prominent.

Female.—Face wider than in the male; fore tarsi but little longer than their tibiae, usually black from the middle of the third joint, sometimes infuscated a little from the tip of the first joint; wing as in the male except that the costa is not enlarged at tip of fifth vein; bristles of middle tibiae and tarsi as in the male.

Redescribed from many specimens from the following localities: Brookings, South Dakota (Aldrich); Lafayette, Indiana, June 8–11; Princeton, New Jersey, July 21; Cuyahoga Falls, Ohio, August 14; Western New York, June 10–October 19; Toronto, Ontario, July 4; Port Credit, Ontario, July 15.

Type localities.—Chicago, Illinois, and Genesee, New York. Melander and Brues report it from Wisconsin; Chagnon from Montreal, Canada.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 178. DOLICHOPUS CELERIPES, new species.

Male.—Length 4 mm.; of wing 3.75 mm. Face rather wide, silvery white. Front green with brownish pollen which is almost invisible but dulls the front. First and second antennal joints yellow; third joint black, a little yellow at base, about as long as wide, pointed at tip. Lateral and inferior orbital cilia yellow, about five of the upper cilia on each side black.

Thorax green with slight bronze reflections, dulled with brownish pollen on the dorsum, this pollen more gray along the front; pleurae dulled with white pollen. Abdomen green, dulled with white pollen, which is more abundant on its sides. Hypopygium black; its lamellae of moderate size, somewhat round, but a little longer than wide, white with a rather narrow black border; jagged and bristly at apex, fringed above with dark hairs which appear more or less yellowish.

Coxae yellow, middle pair a little grayish on outer side; anterior surface with silvery pollen and very minute white hairs, still they appear almost bare; the black bristles at tip rather weak. Femora and tibiae yellow. The hairs on all femora unusually small, only a few longer ones on upper edge of hind pair. Middle and hind femora each with one preapical bristle, the latter without cilia below. Fore tibiae besides the usual bristles with a long slender one at tip on the posterior side which sometimes appears reddish and is fully two-thirds as long as their basitarsi. Middle tibiae with one bristle below, their basitarsi without a bristle above. Hind tibiae slightly thicker than the others, the usual glabrous stripe on upper surface poorly defined; lower edge with a row of bristle-like hairs below. Fore and middle tarsi about one and a fourth times as long as their tibiae, with the tips of the joints brown or blackish, darker at tip; second joint about half as long as first, third a little shorter than second, fourth and fifth of nearly equal length, fourth slightly shorter than third. Hind tarsi blackish from the tip of first joint. Calypters, their cilia and the halteres yellow.

Wings (fig. 178) grayish; costa with a conspicuous enlargment at tip of first vein, which tapers into the costa; last section of fourth vein a little bent near basal third; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being nearly obsolete.

Female.—Face wide, silvery gray; third antennal joint a little smaller than in the male; coxae, legs, tarsi and wings about as in the male, except that there is no enlargment of the costa at tip of first vein and no pale bristle at tip of fore tibiae like the one in the male. The thorax is more metallic brown or blackish, but it seems to be discolored in the only female we have.

Described from 1 male from Colorado, taken by C. F. Baker; and 1 pair taken by Childs at Hood River, Oregon, August 2, 1914.

Type.—Male, Cat. No. 23053, U.S.N.M., from Oregon.

No. 179. DOLICHOPUS SCAPULARIS Loew.

Dolichopus scapularis Loew, Neue Beitr., vol. 8, 1861, p. 22; Mon. N. Amer. Dipt., pt. 2, 1864, p. 64.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 20.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 3–5.7 mm.; of wing 4–5.7 mm. Face rather wide, only a little narrowed below, silvery white, sometimes a very little tinged with yellow just below the antennae. Front green, usually with blue, rarely with violet reflections, with grayish pollen along the orbits. Proboscis and palpi dark yellow. Antennae wholly yellow, or nearly so; third joint from one and a fourth to twice as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish white, about seven of the upper cilia on each side black.

Thorax green; dorsum often with bronze reflections, sometimes it is mostly blue or violet in color; humeral callosity yellow, sometimes only yellow on its lower edge; usually the lateral edges of the dorsum from near the root of the wing to the scutellum and lateral corners of scutellum are yellow, sometimes the scutellum is yellow with a metallic spot in the center at base, but sometimes the only yellow to be found on the thorax is a line on lower edge of the humeral callosity; the dorsum is dulled with rather conspicuous grayish or yellowish pollen; pleurae dulled with white pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black, usually with more or less yellow especially at tip; its lamellae of moderate size, somewhat triangular, with the upper angle broadly rounded, white with rather narrow black border on apical and upper margins, jagged and bristly on lower half of apical margin, above that fringed with black hairs.

Coxae yellow, middle ones with a blackish spot on outer surface; fore coxae with minute yellow hairs on the anterior surface and usually with a few little black ones along their inner edge. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated for about half their length on lower inner edge with yellow hairs, the longest of which is scarcely as long as the width of the femora; they begin before the middle of the femora and do not reach its tip, but are continued to tip and base by little yellow hairs. Posterior tibiae only a little thickened, the usual glabrous stripe on upper surface although not conspicuous is distinct and reaches from near the base to beyond the middle of the tibiae; the inner surface is glabrous from near the base nearly to the middle and is continued to the tip by a very narrow line just inside of the inner row of large bristles. Fore tarsi more than one and a half times as long as their tibiae, the first two joints being nearly as long as the tibia, first three joints yellow, still sometimes a very little infuscated from the tip of first joint, fourth and base of fifth black or blackish, fifth decidedly yellowish on apical half, shorter than fourth. Middle tarsi about one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, still often quite yellow to the tip of the third joint; first joint with a bristle beyond the middle of its upper side, their tibiae with three bristles below, one pair at apical third and one bristle at basal third. Hind tarsi nearly one and one-third times as long as their tibiae, colored like the middle ones. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 179) grayish, sometimes slightly tinged with yellowish brown in front; costa yellowish on inner edge, with a slight enlargement at tip of first vein, which is yellowish and usually has a brown spot on its surface; last section of fourth vein a little bent near its basal third, sometimes this bend is very small, leaving this section of fourth vein nearly straight and almost parallel with third vein; usually the bend is more conspicuous. Hind margin of wing only slightly indented at tip of fifth vein, rather evenly rounded, the anal angle being broadly rounded, not prominent.

Female.—Face a little wider than in the male; fore coxae usually with more black hairs on inner edge; fore tarsi about one and a fourth times as long as their tibiae, colored as in the male, except that the fifth joint does not seem to be any paler toward its tip, but it is shorter than the fourth; second joint about two-thirds as long as the first, being shorter in proportion than in the male; posterior tibiae without a glabrous stripe on inner side; hind femora without cilia, but have a row of small delicate yellow hairs on their lower inner edge, which are quite easily seen; wings without the enlargement at tip of first vein, otherwise they are about as in the male.

Redescribed from many specimens from the following locations: Pittsburgh, Pennsylvania, June 3; Lafayette, Indiana (Aldrich), July 6; Knoxville, Tennessee, May 19 (Summers); Lawrence, Kansas (Aldrich); Washington, District of Columbia, June; Dallas, Texas, May 31; Western New York, June 22–September 2; Fort Erie, Ontario, July 2.

Type localities.—Washington, District of Columbia; Illinois, and Middle States. Aldrich reports it from Kansas, Pennsylvania, and Ohio; Melander and Brues from Wisconsin; Johnson, Insects of New Jersey, from Iona, New Jersey, September 12.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 180. DOLICHOPUS DOMESTICUS, new species.

Male.—Length 4.75–5.2 mm.; of wing 5 mm. Face rather narrow, yellowish, more silvery below. Front shining green, in one specimen violet. Antennae yellow; third joint infuscated on apical half, longer than wide, pointed at tip. Lateral and inferior orbital cilia whitish; about five of the upper cilia on each side black.

Thorax shining green; dorsum with violet reflections, and with thin gray pollen along the front. Abdomen green with coppery reflections and black incisures; the white pollen on its sides abundant. Hypopygium black with green reflections; its lamellae (fig. 180*a*) of moderate size, somewhat subquadrate, but narrowing into the stem; this narrowing is about equal on each side and they are cut off nearly straight at apex; white with a narrow black edge at apical corners, jagged and bristly at apex.

Coxae, femora, and tibiae yellow. Middle coxae, and sometimes the hind pair, a little blackened on outer surface; anterior surface of fore coxae with silvery pollen and very minute pale hairs. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with long slender yellow hairs, the longest of which are near the middle and a little longer than the width of the femora, from the middle of the femora to the base the cilia are continued by little yellow hairs. Posterior tibiae only a little thickened, their inner surface with a glabrous space near the base, which is about one-third as long as the tibia. All tarsi black from the tip of the first joint; middle tarsi one and a fourth, fore and hind tarsi one and a third times as long as their tibiae; fore tarsi with the joints of decreasing length; middle basitarsi with one large bristle above. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 180) grayish; costa very slightly enlarged at tip of first vein; last section of fourth vein a little bent just beyond its basal third; hind margin of wing slightly indented at tip of fifth vein; anal angle rather prominent.

Female.—Face wider, but narrow for a female; third antennal joint smaller and less infuscated; tarsi about as in the male, except that they are a little shorter; hind femora with a row of very small yellow hairs on lower inner edge; hind tibiae more slender and without the glabrous stripe on inner side; wing about as in the male.

Described from 3 males and 2 females; 1 male and the 2 females were taken at Westville, New Jersey (Johnson), July 21; 1 male at East Aurora, New York, August 7; and 1 male in the Loew collection taken at New York.

Type.—Male, Cat. No. 23054, U.S.N.M. from East Aurora, New York.

This species comes close to *scapularis* Loew, but the humeri are not at all yellow nor is there any yellow on the thorax. It differs also in having the cilia on the hind femora longer and more delicate. The Loew specimen differs from the others in having the front violet and the face white; the bend in the fourth vein is greater, almost broken. I do not think there is any doubt of its being the same species.

No. 181. DOLICHOPUS LATIPES Loew.

Hygroceleuthus latipes Loew, Neue Beitr., vol. 8, 1861, p. 5; Mon. N. Amer. Dipt., pt. 2, 1864, p. 17.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, pp. 24 and 155; pl. 1, fig. 26.—Wheeler, Proc. Calif. Acad. Sci., vol. 2, 1897, p. 2.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 128, fig.

Male.—Length 5.5–6 mm.; of wing 5 mm. Face moderately narrow, long, reaching the lower corner of the eye, of nearly equal width, silvery white, slightly tinged with yellow just below the antennae. Front dark shining green. Antennae yellow; first joint long; third with the apical half blackened, oval, scarcely pointed at tip, about one and a half times as long as wide. Lateral and inferior orbital cilia yellowish white, four or five of the upper cilia on each side black.

Thorax dark shining green with a little gray pollen on the anterior part of the dorsum; pleurae dulled with white pollen. Abdomen dark shining green, sometimes with bronze reflections; the white pollen on its sides moderately abundant. Hypopygium black with green reflections; its lamellae rather small, somewhat quadrilateral but with the apical margin broadly rounded, whitish with a black border on the apical margin, which is jagged and bristly.

Fore coxae yellow with a few minute yellow hairs on their anterior surface and usually with a few black ones on inner edge near the base; middle and hind coxae black with yellow tips, sometimes the latter mostly yellow, blackened only on the basal half of outer side; femora and tibiae yellow; middle and hind femora each with one preapical bristle, the latter without cilia below, but they have three bristle-like hairs on upper outer edge; these are scarcely in a row with the preapical bristle, and increase in length apically; middle tibiae with a bristle on upper side near the middle which is nearly twice as long as the other bristles on these tibiae, and with two large bristles below, one near basal and one near apical third. Posterior tibiae but little thickened, their bristles longer than usual; on their inner surface there is a glabrous stripe just inside of the inner row of large bristles, which is often of a darker color. Fore tarsi a little longer than their tibiae, black from the tip of the first joint, which is nearly as long as the remaining four taken together; fifth joint a little longer than the fourth; middle tarsi (fig. 181*a*) scarcely longer than their tibiae; first joint normal, about as long as the three following joints taken together, without a bristle above, yellow or whitish with extreme tip black; last four joints compressed; second joint widening apically, yellowish, but black on upper edge and at apex; last three joints black, third and fourth of nearly equal width, fifth about half as long and wide as fourth, somewhat round in outline; second, third, and fourth joints fringed above with black hairs. Hind tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia, which often appear reddish in certain lights.

Wings (fig. 181) tinged with brown on anterior half, more grayish on posterior half; costa with an elongated enlargement at tip of first vein, which is as long as the cross-vein; last section of fourth vein bent near its middle; hind margin of wing a little indented at tip of fifth vein; anal angle rounded.

Female.—Face wide, of the usual length, silvery white; femora with the same three bristle-like hairs before the preapical bristle as in the male; middle tibiae with a bristle a little longer than the others near its middle; their tarsi plain, slightly shorter than their tibiae, black from the tip of first joint; still the second sometimes a little yellowish; three middle joints slightly compressed; costa without an enlargement at tip of first vein.

Redescribed from specimens from Brookings, South Dakota; August 12; Wisconsin, August; Moscow, Idaho (Aldrich), July 22; Franconia, New Hampshire; Pullman, Washington (Melander), June 30; Lewiston, New York, August 11; Ithaca, New York, July 22; Grange Island, New York, August 8; Yellowstone Lake, Montana (Melander), August 9; Three Forks, Montana, August 1; Quebec, Canada, August 10; Clayton, British Columbia, August 9; Ottawa, Canada, September 8; Ridgeway, Ontario, August 8, September 6.

Type locality.—Red River of the North. Aldrich reports it from South Dakota, Wyoming, Connecticut, and Wisconsin; Wheeler from Wisconsin and Illinois; Melander and Brues from Massachusetts and Pullman, Illinois.

No. 182. DOLICHOPUS ALDRICHII Wheeler.

Hygroceleuthus aldrichii Wheeler, Proc. Calif. Acad. Sci., vol. 2, 1897, p. 3, pl. 1, fig. 1–3.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 129, figs.

Male.—Length 3.5–5 mm.; of wing 4–4.5 mm. Face rather narrow and long, not reaching the lower corner of the eye, yellowish white, sometimes nearly pure white. Front shining green. Antennae black with the first two joints yellow on the lower inner side; first joint long and with long black hair; third joint oval, short, a little pointed at tip, not much longer than wide; arista rather thick. Lateral and inferior orbital cilia yellowish, about ten of the upper cilia on each side black.

Thorax green with bronze reflections and rather abundant gray pollen on the dorsum. Abdomen green with coppery reflections on the hind margins of the segments; the white pollen on its sides conspicuous. Hypopygium black; its lamellae rather small, somewhat triangular, yellowish with a brown border, which is more conspicuous when viewed from below, scarcely at all jagged, fringed with little yellowish hairs.

Fore coxae yellow with a green stripe on outer posterior edge; anterior surface with silvery pollen and minute delicate white hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below. Posterior tibiae a little thickened, blackish at tip, but the black not well defined, with a row of five large bristles on the lower outer edge, their inner surface with a glabrous stripe, which is widest at their base. Fore tarsi plain, not as long as their tibiae, stout, black from the tip of the first joint. Middle tarsi (fig. 182*a*) about as long as their tibiae, black from the tip of the first joint, which is mostly whitish, without a bristle above; second, third, and fourth joints a little compressed, but rather thick, fringed on both edges with black hairs. Hind tarsi black with the base of the first joint a little yellowish; calypters and halteres yellow, the former with long black cilia.

Wings (fig. 182) grayish, darker in front of third vein; costa a little thickened at tip of first vein, but this thickening is cylindrical and more readily seen from the front of the wing; last section of fourth vein considerably bent near its middle; third vein bent backward at tip; hind margin of wing a little indented at tip of fifth, bilobed at the anal angle, which is cut off very straight at the base of the wing, not rounded as usual.

Female.—Face wide but rather long, yellowish white; antennae and fore and hind tarsi about as in the male; fore coxae covered with black hairs on the anterior surface; middle tarsi slightly compressed, colored about as in the male; wings with the hind margin evenly rounded; costa without an enlargment.

Redescribed from 8 males and 4 females from Colorado and Moscow, Idaho (Aldrich); one of the latter was taken Aug. 23; 1 male from Pullman, Washington, July 12; and 1 female taken at Uinta National Forest, Utah, Aug. 29, on Currant Creek, at 8,000 feet elevation.

Type localities.—Moscow, Idaho, Wyoming; Melander and Brues report it from Idaho, Wyoming, and Colorado.

Type.—In American Museum of Natural History, New York City.

No. 183. DOLICHOPUS BOLSTERI, new species.

Fig. 1, page 3.

Male.—Length, 5 mm.; of wings, 5.5 mm. Face wide, scarcely narrowed below, silvery gray. Front shining green. Antennae wholly black; third joint about as long as wide, somewhat triangular, pointed at the tip. Lateral and inferior orbital cilia yellowish white, about seven of the upper cilia on each side black.

Thorax green, dorsum a little dulled with pollen, which is gray along the front, becoming more brownish on the disk; and with a median coppery vitta, which is divided by a fine green line; pleurae dulled with gray pollen. Abdomen green with narrow black incisures, in front of which there are coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black, rather short; its lamellae (fig. 183*a*) small, triangular, but rounded at apex, yellowish with a broad black apical border, a little jagged and bristly at lower corner, otherwise fringed with little black hairs on apical and upper margins, and hairy on the disk.

Fore coxae wholly yellow, their anterior surface covered with minute black hairs; there are only a few pale hairs at upper outer corner. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, but with a row of minute yellow hairs on lower inner edge. Posterior tibiae scarcely thickened. Middle tibiae with a pair of bristles at basal third below and one large and two small bristles before them on the lower edge; their basitarsi with one large bristle near apical third of upper edge. Fore and middle tarsi about one and one third times as long as their tibiae, black from the tip of the first joint; fore tarsi with the fifth joint as long as third and a little longer than fourth, a very little compressed, first joint as long as the three following joints taken together, second a little longer than third. Hind tarsi black from the tip of the first joint, which is pale yellow. Calypteres and halteress yellow, cilia of the former yellowish.

Wings (fig. 183) grayish; costa without an enlargement at tip of first vein; last section of fourth vein bent beyond its basal third; third vein nearly parallel with fourth; hind margin of wing scarcely indented at tip of fifth vein; anal angle prominent but rounded.

Female.—Face a little wider than in the male, yellowish gray; cilia of the calypters, anterior coxae, antennae and wings about as in the male; fore and middle tarsi a little shorter, fifth joint of the former not at all compressed, as long as third, the fourth being shorter as in the male; middle basitarsi without a bristle above, but it has a very small one below (the bristle on upper side may have been broken off, but I do not think so).

Described from 1 pair taken at Little River, Newfoundland, July 18, by P. G. Bolster.

Holotype and allotype.—In the collection of C. W. Johnson.

No. 184. DOLICHOPUS TONSUS Loew.

Dolichopus tonsus Lowe, Neue Beitr., vol. 8, 1861, p. 16; Mon. N. Amer. Dipt., pt. 2, 1864, p. 47.—Aldrich, Cat. N. Amer. Dipt., 1905, p. 301.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 6 mm.; of wing the same. Face rather narrow, pale golden yellow, more whitish on the lower part. Front green, somewhat shining. Antennae wholly black; third joint about as long as wide, pointed at tip. Lateral and inferior cilia yellowish, about seven of the upper cilia on each side black.

Thorax green; dorsum with white pollen along the front and central portions, which always leaves a median, shining vitta which is often coppery and sometimes with copper spots on the sides; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large, somewhat elliptical, but tapering into the stem, whitish with broad black border on apical margin; jagged and bristly at lower corner, above this fringed with pale hairs to about middle of upper edge; from that to the base the hairs are black.

Fore coxae yellow, clothed on anterior surface with minute yellow and black hairs; sometimes they are mostly yellow and at others mostly black. Middle and hind coxae black with yellow tips, femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with a row of little yellow hairs on lower inner edge, which are not longer than tne hairs on upper edge. Middle tibiae with three bristles below, one pair at apical third and one bristle at basal third, their basitarsi with a large bristle above; posterior tibiae scarcely thickened; the glabrous stripe on upper surface poorly defined. Fore tarsi (fig. 184*a*) about one and two-thirds times as long as their tibiae; second joint two-thirds as long as first; third, fourth, and fifth of nearly equal length and each a little shorter than the second; fourth and fifth joints much conpressed; fourth white, silvery on the sides, nearly half as wide as long; fifth joint black, a little wider than the fourth, with a silky luster on the sides. Middle tarsi about one and one-fourth times as long as their tibiae, infuscated from the tip of the first joint, still only the tips of the joints black. Hind tarsi black from the base of the second joint, but sometimes colored about like the middle ones. Calypters, their cilia, and the halteres yellow.

Wings (fig. 184) grayish; costa not enlarged at tip of first vein; last section of fourth vein bent near its basal third; hind margin of wing slightly flattened between the apex and tip of fifth vein, scarcely indented at tip of fifth vein; anal angle a little prominent, but the wing narrowing from tip of sixth vein to the anal angle.

Redescribed from 7 males. J. M. Aldrich has specimens from Clementon, New Jersey, taken May 30 (Johnson); Woods Hole, Massachusetts (Hough): and from Lafayette, Indiana, taken May 25. I had specimens taken at Great Falls, Virginia, May 9–June 28. W. T. Davis took it at Wyandarch, Long Island, New York, May 25.

Type locality.—Washington, District of Columbia. Melander and Brues report it from Massachusetts; Johnson from Clementon, New Jersey, May 30, and Riverton, New Jersey, May 30.

This differs from *eudactylus* in not having cilia on the hind femora, and it has the last three joints of fore tarsi equal, while *eudactylus* has the fifth distinctly the shortest: the hind margin of the wing in *tonsus* is also more sinuous.

No. 185. DOLICHOPUS EUDACTYLUS Loew.

Dolichopus eudactylus Loew, Neue Beitr., vol 8, 1861, p. 16; Mon. N. Amer. Dipt., pt. 2, 1864, p. 46.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 11, pl. 1, fig. 2 (the figure is incorrect).—Johnson, Insects of New Jersey, 1909, p. 757.

Male.—Length 6–7 mm.; of wing 6–6.5 mm. Face rather narrow, ocher yellow or golden yellow, more whitish below. Front shining green, all the lower part covered with coarse yellowish brown pollen which is only visible in certain lights. Antennae wholly black; the first joint sometimes appears yellowish because of the pollen on under side; third joint about as long as wide, pointed at tip. Lateral and inferior orbital cilia yellowish, about six of the upper cilia black.

Thorax shining green; dorsum dulled a little with white pollen on the anterior portion; usually there is a coppery spot on each side; pleurae dulled with white pollen. Abdomen green, usually with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 185) large, somewhat elliptical, but narrowing in the stem, whitish with wide black border on apical margin, which is jagged and bristly on its lower portion; above this they are fringed with yellowish hairs, except at base, where the hairs are black; they are nearly twice as long as wide.

Fore coxae yellow, anterior surface covered with little black hairs. Middle and hind coxae black with yellow tips; femora and tibiae yellow. Middle and hind femora each with one preapical bristle; lower inner edge of hind femora ciliated from the middle nearly to the tip with yellow hairs, which are nearly as long as the width of the femora. Middle tibiae with three bristles below, one pair near apical third and one bristle near basal third. Posterior tibiae scarcely thickened. Fore tarsi (fig. 185*a*) nearly one and two-thirds imes as long as their tibiae; first three joints slender, yellow; second joint from two-thirds to three-fourths as long as first; third and fourth of nearly equal length, each more than three-fourths as long as second; fourth and fifth joint compressed and widened; fourth white, fifth black, distinctly shorter than fourth, oval, both with little black hairs on upper edge. Middle tarsi about one and a fourth times as long as their tibiae, infuscated from the tip of the first joint, still the bases of the joints are more or less yellow, their tips black or brown; middle basitarsi with a large bristle above. Hind tarsi black from the tip of the first joint. Calypters, their cilia, and the halteres yellow.

Wings grayish; costa scarcely enlarged at tip of first vein; hind margin of wing flattened a little from the apex of the wing to tip of fifth vein, where it is a little indented; last section of fourth vein bent near its basal third; anal angle rather prominent, but rounded.

Female.—Face wide, covered with whitish pollen; fore tarsi plain, about one and a fourth times as long as their tibiae, colored about like the middle ones in the male, fifth joint nearly as long as the third, fourth a very little shorter; hind femora without cilia; wings more evenly rounded on the hind margin, without costal enlargement.

Redescribed from many males. The collection of J. M. Aldrich has specimens taken at Battle Creek, Michigan; Ithaca, New York, June 7; Agricultural College, Michigan, June 10; Lafayette, Indiana, June 2–July 11. I have taken it at Olcott, New York, July 4; Erie County, New York, June 4–July 22; Ridgeway, Ontario, June 29–July 15; and Chatham, Ontario, June 17.

Type localities.—New York and Massachusetts. Aldrich reports it from Kansas; Johnson from Riverton, New Jersey, July 3; Woodbury, New Jersey, June 7.

No. 186. DOLICHOPUS VERSUTUS, new species.

Male.—Length 6–6.5 mm.; of wing 5–5.5 mm. Face narrow, pale golden yellow, more whitish below. Front green, sometimes coppery, shining. Antennae almost wholly black, usually a very little brownish, reddish, or even yellowish on the lower apical corner of the first joint; third joint scarcely longer than wide, the tip distinctly pointed. Lateral and inferior orbital cilia yellow, about seven of the upper cilia on each side black.

Thorax shining green; dorsum dulled a little with white pollen; along the front, on the central part, the dorsum has the pollen more brown and it is almost invisible except when viewed from the side, sometimes with coppery reflections, which form vittae or spots on the dorsum; pleurae a little dulled with whitish pollen. Abdomen green, shining, with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae large and formed as in *eudactylus;* twice as long as wide, whitish with a black border, jagged and bristly on lower half of apical end, otherwise the lamellae are fringed with yellowish white hairs, except at base above where there are a few black ones.

Fore coxae yellow, their anterior surface with small black hairs and a few very delicate yellow ones along the outer edge. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with long yellow hairs on central portion of the lower inner edge, the longest hairs being considerably longer than the width of the femora. Middle tibiae with three bristles below, one pair near apical third and one bristle near basal third, their basitarsi with one large bristle above. Posterior tibiae distinctly thickened; the glabrous stripe on upper surface reaching nearly their whole length, inner surface with a broad glabrous space extending two-thirds their length and not reaching base or tip.

Fore tarsi (fig. 186*a*) about one and three-fourths times as long as their tibiae; first three joints slender, yellow, second about two-thirds as long as first, third three-fourths as long as second and a little longer than fourth, as long or slightly shorter than fifth joint; fourth and fifth joints much compressed and widened, fourth white with a silvery luster on the sides, fringed above with minute black hairs and usually with several on outer side; fifth joint black, a little wider than fourth, somewhat oval, but straight below, two-thirds as wide as long, a little longer than the fourth, fringed above with black hairs. Middle tarsi one and a third times as long as their tibiae; middle and hind tarsi infuscated from the tip of first, or base of second joint, but only the last two joints black. Calypters, their cilia, and the halteres yellow.

Wings (fig. 186) grayish; costa moderately enlarged at tip of first vein; last section of fourth vein bent near basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle rounded, but a little prominent.

Female.—Face wide, grayish white; fore tarsi plain; a little longer than their tibiae, yellowish with only the last joint black; bristle on middle basitarsi near its middle; costa without enlargement; hind femora without cilia below.

Described from many males and females. The collection of J. M. Aldrich has males from Woods Hole, Massachusetts, taken September 25 (Hough), and from Lafayette Indiana, taken June 11–July 4. C. W. Johnson has males from Niagara Falls, New York, June 24; Mathias Point, Virginia, May 22; Popes Creek, Maryland, May 22; Fall River, Massachusetts, June 17, and Manomet, Massachusetts, July 27. I have taken it at Ridgeway, Ontario, June 18–July 15.

Type.—Male, Cat. No. 23055, U.S.N.M., from Ridgeway, Ontario.

No. 187. DOLICHOPUS DAKOTENSIS Aldrich.

Dolichopus dakotensis Aldrich, Kansas University Quarterly, vol. 2, 1893, p. 11, pl. 1, fig. 1.

Male.—Length 6 mm.; of wing the same. Face narrow, golden yellow, a little more whitish below. Front shining green. Antennae wholly black or nearly so; third joint scarcely longer than wide, somewhat conical in outline, obtusely pointed at tip. Lateral and inferior orbital cilia yellow, four or five of the upper cilia on each side black.

Thorax green, with considerable white pollen on the front of the dorsum, the pollen on the center of the dorsum is more brownish and leaves a rather broad median vitta which is more shining and sometimes coppery; pleurae dulled with white pollen. Abdomen green, with black incisures and coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 187*a*) large, somewhat elliptical, twice as long as wide, whitish with rather wide black apical border, jagged and bristly at lower corner, otherwise fringed with yellowish hairs.

Fore coxae yellow, anterior surface with minute yellow hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with rather scattering whitish hairs for nearly their entire length, the longest of which are scarcely as long as the width of the femora. Posterior tibiae thickened, inner surface with a broad glabrous space, extending from the base nearly to the tip. Fore tarsi (fig. 187*b*) twice, or sometimes more than twice, the length of their tibiae; second joint scarcely two-thirds as long as first, third and fourth of nearly equal length, each about two-thirds as long as second, and three-fourths as long as fifth; first and second, slender, yellow; third and fourth compressed, silvery white, widening from the base of third to tip of fourth; fifth much compressed, black, two-thirds as wide as long. Middle tarsi longer than their tibiae, infuscated from the tip of the first joint, still with the bases of the second and third ones paler, only their tips black. Hind tarsi black from the tip of the first joint, but sometimes colored like the middle ones. Calypters, their cilia, and the halteres yellow.

Wings (fig. 187) grayish; costa distinctly enlarged at tip of first vein, this enlargement tapering into the costa, but not reaching half the distance to the tip of second vein; last section of fourth vein a little bent near its basal third; hind margin of wing scarcely indented at tip of fifth vein, a little flattened from the apex of the wing to the tip of the fifth vein, expanding basally from fifth vein, then narrowing to tip of the sixth vein; anal angle prominent.

Female.—Face wide, white; fore tarsi plain, last two or three joints black, fifth joint longer than fourth, nearly as long as third; hind femora without cilia below; costa without enlargement. Middle tibiae with three bristles below, one at basal, two at apical third, their basitarsi with one large bristle above.

Redescribed from the type material and 10 males. The type specimens were taken at Brookings, South Dakota, June 16, 1891; there are 2 other males in the collection of J. M. Aldrich, 1 taken at Quebec, June 10, 1906, by Beaulieu, the other in Polk County, Wisconsin, in July, by Baker. I have taken males at Rochester, New York, May 29; Fort Erie, Ontario, June 6–July 4; and at Ridgeway, Ontario, June 18, 29.

Types.—In the collection of J. M. Aldrich.

No. 188. DOLICHOPUS PALAESTRICUS Loew.

Dolichopus palaestricus Loew, Cent., vol. 5, 1862, No. 84; Mon. N. Amer. Dipt., pt. 2, 1864, p. 328.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 10, pl. 1, fig. 3.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 4.5–5.5 mm.; of wing 4.5 mm. Face rather narrow, golden yellow or yellowish white. Front green or blue-green, sometimes with coppery reflections. Antennae wholly black or nearly so; third joint scarcely longer than wide, somewhat conical in outline, obtuse at tip. Lateral and inferior orbital cilia yellow, about five of the upper cilia on each side black.

Thorax shining green; dorsum with a little white pollen along the front, sometimes with a median coppery vitta and a coppery spot on each side; pleurae dulled with white pollen. Abdomen shining green with slight coppery reflections. Hypopygium black; its lamellae large, nearly twice as long as wide, somewhat elliptical, whitish with broad black border on apical margin, which is jagged and bristly on lower half, above this they are fringed with yellow hairs and a few black hairs near the base above.

Fore coxae yellow, with minute black hairs on their anterior surface, middle and hind coxae black with yellow tips. Femora and tibiae yellow, middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with rather scattering yellow hairs, which commence near the middle of the femora and reach nearly to their tips, the longest hairs nearly as long as the width of the femora. Middle tibiae with three or four large bristles below, one pair at apical third and one bristle at basal third, sometimes with another bristle between these, their basitarsi with one large bristle above. Posterior tibiae considerable thickened; inner surface glabrous for two-thirds their length, the usual glabrous stripe on upper surface distinct but a little broken. Fore tarsi (fig. 188*a*) one and three-fourths times as long as their tibiae; first two joints together about equal to their tibiae in length; second joint a little more than half as long as first and nearly as long as third and fourth taken together; fourth only slightly shorter than third, fifth a little longer than third and fourth together; first two joints slender, yellow, still with slight whitish reflections; third and fourth joints compressed and widening from base of third to tip of fourth joint, whitish with distinct silvery reflections; fifth joint black with silvery reflections on outer and yellowish or reddish on inner surface, much compressed and widened, two-thirds as wide as long, somewhat pear-shaped in outline. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the first joint, still the second and even the third yellowish with only their tips black. Hind tarsi normally wholly black, but sometimes the first joint is yellowish at base, which color may even extend nearly to its tip, becoming darker and shading into black. Calypters, their cilia and the halteres yellow.

Wings (fig. 188) grayish; costa with a small elongated enlargement at tip of fifth joint; last section of fourth vein a little bent just beyond its basal third; hind margin of wing a very little indented at tip of fifth vein, a very little flattened from the apex of the wing to tip of fifth vein; anal angle prominent.

Female.—Face whitish, wide; fore tarsi plain, first joint as long as the two following joints together, third only a little shorter than second, fourth and fifth of equal length; yellowish, becoming darker toward the tip, but only the last joint black; hind femora and tibiae normal; wing without an enlargement of the costa, otherwise about as in the male.

Redescribed from about 50 males and several females. The collection of J. M. Aldrich has specimens from Dover, New Jersey, June 8; Waubamic, Perry Sound, Ontario (Parish) June 11; and, from Franconia, New Hampshire (Mrs. Slosson). I have them from Bratton Woods, New Hampshire, June 30; Lewiston, New York, May 30; Olean, New York, August 5; Ottawa, Canada, July 2; and from the following places in Ontario, Canada: Niagara Falls, June 10; Ridgeway, June 6–July 15; Toronto, July 4; Kearney, July 2–8; Danbury, June 16.

Type.—In Museum of Comparative Zoology, Cambridge, Mass., from New Hampshire.

No. 189. DOLICHOPUS BATILLIFER Loew.

Dolichopus batillifer Loew, Neue Beitr., vol. 8, 1861, p. 19; Mon. N. Amer. Dipt., pt. 2, 1864, p. 45.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 757.

Male.—Length, 6 mm.; of wing, 5–5.5 mm. Face narrow, golden yellow, a little more whitish below. Front green, only slightly dulled with white pollen. Antennae wholly black, or very nearly so; third joint scarcely longer than wide, somewhat conical in outline. Lateral and inferior orbital cilia yellow, about eight of the upper cilia on each side black.

Thorax bright shining green; still it has considerable white pollen on the dorsum, especially along the front, and it leaves three shining vittae, which are more or less coppery; sometimes the posterior portion of the dorsum and the scutellum is more blue or violet. Abdomen green with coppery reflections; the white pollen on its sides abundant. Hypopygium black; its lamellae rather large, whitish with wide black border on their apical margin, which is jagged and bristly on lower half, fringed above this with yellowish hairs; they are somewhat triangular in outline, but broadly rounded on upper corner.

Fore coxae yellow, anterior surface covered with little black hairs; middle and hind coxae black with yellow tips; femora and tibiae yellow; middle and hind femora each with one preapical bristle, the latter, ciliated on the central half of lower inner edge with dense yellow hairs, which are not as long as the width of the femora. Middle tibiae with four bristles below, one at basal and two at apical third and one between these, their basitarsi with a large bristle above near apical third. Posterior tibiae thickened, especially in the middle; inner surface glabrous for more than half their length and a little excavated on this portion, fringed below with an irregular row of bristles. Fore tarsi (fig. 189) about one and a half times as long as their tibiae; first three joints normal, yellow, fourth white, fifth black; first joint nearly as long as the two following taken together, third one-third as long as second and a little longer than fourth, a very little widened at tip; fourth and fifth joints compressed, fourth widening at tip, apical edge brownish, fifth a little longer than the third and fourth together, somewhat pear-shaped in outline, two-thirds as wide as long, with a minute fringe of white hairs on apical edge; fourth and fifth joints fringed above with black hairs, fifth with a silky luster on the sides, which varies from black to silvery according to the angle from which it is viewed. Middle tarsi only a little longer than their tibae, black from the tip of the first joint. Usually the hind tarsi are black from the extreme tip of the first joint, but sometimes the whole of first and bases of following joints are yellow. Calypters, their cilia and the halteres yellow.

Wings a little grayish; costa with an elongated enlargement at tip of first vein; last section of fourth vein bent a little beyond its basal third; hind margin of wing slightly indented at tip of fifth vein; anal angle quite prominent, still cut off from a point a little beyond the tip of sixth vein, scarcely rounded, but somewhat flattened in outline.

Female.—Face wide, yellowish white; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint, still the joints following yellowish at base, fifth joint as long as third, fourth shorter; costa without an enlargement; hind margin of wing rather evenly rounded, the anal angle being rounded, still rather prominent.

Redescribed from 3 males and several females. The males are from the following places: Big Stone City, South Dakota, taken by J. M. Aldrich; Franconia, New Hampshire, taken by Mrs. Slosson; I took 1 at Portage, New York, July 1, 1917.

Type localities.—Illinois, and West Point, New York. Melander and Brues report it from Massachusetts; Johnson from New Jersey.

Types.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

If we compare the six forms, *palaestricus, batillifer, dakotensis, tonsus, eudactylus* and *versutus*, which have just been described, we find them divided into two groups, one having the fore tarsi gradually compressed and widened from the base of the third joint to the tip of the fourth, these two joints being white; the fifth joint is much compressed and wider, black; this group contains *batillifer* Loew, *palaestricus* Loew, and *dakotensis* Aldrich; in the first two of these the fourth joint of fore tarsi is less than half as long as the fifth, while in *dakotensis* the fourth is three-fourths as long as fifth; in all three of these species the fifth joint is very large and about the same size and shape; these three also have the cilia of the hind femora as long or scarcely as long as the width of the femora; *palaestricus* is separated from *batillifer* by the color of the posterior tarsi, which are black nearly or quite to their base in *palaestricus*; still sometimes the first joint is largely yellowish, but the yellow shading into the black is not sharply defined, while in *batillifer* the first joint is yellow with the tip sharply black, or rarely almost wholly yellow; in *batillifer* the cilia of hind femora are dense and occupy the center of the femora, while in *palaestricus* they are more scattering and extend nearly to their tips; the glabrous surface on inner side of hind tibiae in this form extends about two-thirds of their length, while in *batillifer* it reaches only about half their length; the third and fourth joints of fore tarsi are not so wide in *batillifer* as in *palaestricus*. The other three forms have the third joint normal, the fourth joint much compressed and wide, and it is white, the fifth joint still more expanded and black; *tonsus* has the lower surface of the hind femora without cilia, while in the other two it has long yellow cilia; this form also has the fourth and fifth joints of fore tarsi of nearly equal length; *eudactylus* and *versutus* are separated, first, by the cilia of the hind femora, which are longer than the width of the femora in *versutus* and scarcely as long as the width of the femora in *eudactylus;* second by *eudactylus* having the third and fourth joints of fore tarsi of nearly equal length and the fifth joint distinctly shorter, while in *versutus* the third and fifth are nearly equal in length and the fourth is distinctly shorter than either of these.

No. 190. DOLICHOPUS TENER Loew.

Dolichopus tener Loew, Neue Beitr., vol. 8, 1861, p. 17; Mon. N. Amer. Dipt., pt. 2, 1864, p. 49.—Melander and Brues, Biol. Bull., vol. 1, p. 148.

Male.—Length 4–5 mm.; of wing 3.5–5 mm. Face rather narrow, pale yellow. Front shining green, but in certain lights appearing to be covered with gray pollen which nearly conceals the ground color. Antennae yellow, third joint a little longer than wide, pointed at tip, usually a little blackened there. Lateral and inferior orbital cilia pale yellow, only three or four of the upper cilia on each side black.

Thorax light green; dorsum dulled with gray pollen; in my specimens there are two narrow coppery lines in the center with a narrow green line between them; pleurae dulled with white pollen. Abdomen green with coppery reflections; the lower edges of the dorsum with white pollen and long yellow hairs, which are longest on the second segment. Hypopygium black; its lamellae of moderate size, somewhat round in outline, white with very narrow black border on apical and upper margins, jagged and bristly at apex, fringed above with black hairs.

Coxae yellow; anterior surface of fore coxae with silvery pollen and minute white hairs; middle pair with a small brown spot on outer surface, femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with from six to ten delicate yellow hairs, the longest of which is longer than the width of the femora, and near its middle. Middle tibiae with one small bristle below, their basitarsi without a bristle above. Posterior tibiae only slightly thickened; the usual glabrous stripe on upper surface extending from the base to apical third. Fore tarsi (fig. 190*a*) nearly twice as long as their tibiae, second joint three-fourths to four-fifths as long as first, third three-fourths to fully as long as second, fourth and fifth of nearly equal length, each about one-third or less than one-third as long as third; first four joints very slender, yellow, fourth a very little widened at tip; fifth black, compressed, oval, but straight below, not as wide as long. Middle tarsi nearly one and a half times as long as their tibiae, infuscated from the tip of the first joint. Calypters, their cilia, and the halteres yellow.

Wings (fig. 190) grayish; veins yellowish; costa with a small elongated enlargement at tip of first vein; last section of fourth vein moderately bent before its middle; hind margin of wing scarcely indented at tip of fifth vein, rather evenly rounded, the anal angle being rounded off, nearly obsolete.

Redescribed from 4 males which I took on Grand Island, Erie County, New York, August 17, 1913, and August 18, 1917.

Type locality.—Chicago, Illinois; Melander and Brues report it from Wisconsin.

Type.—In museum of Comparative Zoology, Cambridge, Massachusetts.

No. 191. DOLICHOPUS SICARIUS, new species.

Male.—Length 5 mm.; of wing the same. Face long and rather wide, only a little narrowed below, silvery white, slightly tinged with yellow above. Front blue-green, with a little brownish pollen. Antennae (fig. 191*a*) black, first joint broadly yellow below, being more than half yellow; third joint a little more than twice as long as wide, pointed at tip; arista inserted near the middle of the upper edge. Lateral and inferior orbital cilia whitish, about seven of the upper cilia on each side black.

Thorax green with blue and bronze reflections; somewhat dulled with gray pollen; pleurae a little dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat triangular in outline, whitish with a black apical border, jagged and bristly at apex.

Fore coxae wholly yellow; they appear nearly bare on the anterior surface but have some very minute white hairs. Middle and hind coxae black with yellow tips, the posterior pair being half yellow. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below. Posterior tibiae only a little thickened; the glabrous stripe on upper surface distinct and extending inside of the inner row of large bristles, still a little broken by a few hairs. First two joints of fore tarsi wholly pale yellow and, taken together, about as long as their tibiae; the second about two-thirds as long as the first and a very little compressed, its sides being nearly glabrous (last three joints missing in the type). Middle tarsi about one and a half times as long as their tibiae, infuscated from the tip of the first joint, which is without a bristle above, but with several very small ones below and a larger one on posterior surface, the two first joints, taken together, about equal to the tibiae in length. Hind basitarsi yellow, becoming brown or almost black toward its tip, remaining joints black. Calypters and halteres black, the former with black cilia, and a few pale hairs mixed with them, and in certain lights have a yellowish cast.

Wings (fig. 191) long and a little narrowed; toward their base a little grayish; veins toward the root of the wing yellow; costa without enlargement at tip of first vein; last section of fourth vein a little bent near its basal third, beyond this bend nearly straight; third vein bent backward so as to be about half as far from fourth at tip as at the bend; hind margin of wing nearly straight, notched at tip of fifth vein, and widening a little just basally from this notch; there is a very small lobe at tip of sixth vein, partly caused by the wing receding from this point to the anal angle, which is rather prominent, although narrow. One middle tibia has one, the other two bristles below.

Described from 1 male taken at Waubamic, Ontario, June 14, by H. S. Parish.

Type.—In the collection of A. L. Melander.

This species resemble *porphyrops* in the form of its antennae, from which it is separated by the form of the wings, as well as the color of the hind legs and feet. Although the fore tarsi are broken off, leaving only the first two joints, it seems almost certain that they were enlarged at tip, as the second joint is already very slightly compressed; still the species is well marked by the long, narrow wings with the slight lobe at tip of fifth vein; the long third antennal joint (which by its shape suggested the name), and the yellow hind basitarsi; the latter, however, may sometimes be black almost to their base, as it often is in species where the black shades into the yellow of their base and is not sharply separated.

No. 192. DOLICHOPUS SCOPARIUS Loew.

Dolichopus scoparius Loew, Mon. N. Amer. Dipt., pt. 2, 1864, p. 70.—Wheeler, Psyche, vol. 5, 1890, p. 339.—Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 18, pl. 1, fig. 9.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length 5–6 mm.; of wing 5–5.3 mm. Face rather wide, silvery white, front shining green with reddish purple or blue reflections. Antennae black; first joint yellow below, sometimes only the upper edge black; third joint about as long as wide, rather rounded at tip. Lateral and inferior orbital cilia pale yellow, about eight of the upper cilia on each side black.

Thorax green with well-defined median and poorly defined lateral vittae of a reddish purple color on the dorsum, which is dulled with gray pollen, almost invisible except along the front, pleurae with grayish pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant. Hypopygium black, more or less yellow at tip and on the sides, its lamellae rather large, smooth, and unusually thick; on their inner surface near the middle is a small space covered with little black hairs which reach the upper edge (these are mentioned by Wheeler as a fringe of "delicate black hairs"); these are difficult to see unless the lamellae are extended.

Fore coxae yellow with a large black spot at base on outer surface. These spots sometimes extend as a line more than half their length, their anterior surface covered with stiff black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, all tibiae with numerous strong bristles; middle pair with five bristles below, their basitarsi with one large bristle above and another on the front side near it. Posterior tibiae only a little thickened; the usual glabrous stripe on upper surface broad and reaching the tip. Fore tarsi (fig. 192*a*) about one and a third times as long as their tibiae, black from the extreme tip of the third joint; first joint about equal to the three following joints taken together, second half as long as first, third two-thirds as long as second and but little longer than fourth, a very little widened at tip, fourth and fifth a very little flattened, fringed on each side so as to form when taken together a somewhat elliptical tip to the tarsi; they are wholly black and the fourth joint is slightly the longest. Middle tarsi one and a third times as long as their tibiae, black from the tip of the first joint. Hind tarsi black from the extreme tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 192) grayish, usually tinged with brown in front of third vein and narrowly along the posterior veins; costa without enlargement at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing indented at tip of fifth vein; anal angle prominent.

Female.—Face wide, less silvery than in the male; fore tarsi plain, about one and a fourth times as long as their tibiae, black or infuscated from the tip of the first joint; hind margin of wing distinctly but not very much indented at tip of fifth vein. The orbital cilia of both male and female have one or two black bristles next to the proboscis.

Redescribed from 28 males and several females, taken as follows: Franconia, New Hampshire; Bretton Woods, New Hampshire, June 30; Dover, New Jersey; Erie County, New York, June 2–July 18; Bond Lake, Ontario, July 16; Port Credit, Ontario, July 15; Kearney, Ontario, July 2–7.

Type localities.—Maine and Massachusetts. Aldrich reports it from Pennsylvania and Montreal, Quebec; Melander and Brues from Illionois and Wisconsin; Johnson from Dover, New Jersey, June 23.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 193. DOLICHOPUS QUADRILAMELLATUS Loew.

Dolichopus quadrilamellatus Loew, Cent., vol. 5, 1862, No. 83; Mon. N. Amer. Dipt., pt. 2, 1864, p. 331.—Johnson, Insects of New Jersey, 1909, p. 756.

Male.—Length, 6 mm.; of wing, 5.7 mm. Face wide, scarcely narrowed below, silvery white, very slightly tinged with yellow above. Front shining green or blue-green. Antennae black; first joint black above, yellow below, sometimes mostly black and at others almost wholly yellow; third joint scarcely longer than wide, rounded at tip. Lateral and inferior orbital cilia yellowish with a large black bristle at their lower end next to the proboscis, about seven of the upper cilia on each side black.

Dorsum of thorax shining green with slight bronze reflections; pleurae dulled with white pollen. Abdomen green; the white pollen on its sides abundant. Hypopygium (fig. 193) black; its lamellae large and thick, smooth, deeply cleft so as to appear like four large smooth lamellae, each part oval, still slightly but obtusely pointed at tip, the upper or inner division is slightly darkened and bears two or three black bristles and a few pale hairs at tip.

Fore coxae yellow with a black spot at base on outer side, their front surface covered with little black hairs, except at upper outer corner where there are only delicate yellow hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly glabrous below, but with a few minute pale hairs on lower inner edge. Middle basitarsi with one large bristle above near their middle and another nearly as large on anterior surface near the one on top; middle tibiae with four or five bristles below. Posterior tibiae slightly thickened; the usual glabrous stripe on upper surface broad but not conspicuous; inner surface with a small elongated glabrous spot near the middle. Fore tarsi one and one-third times as long as their tibiae; first three joints slender, yellow, still the third is a little widened and whitish; first joint about as long as the three following taken together, second scarcely half as long as first, last three joints of nearly equal length, each a little more than half as long as the second; fourth and fifth black, slightly flattened and fringed on both sides with black hairs so as to form an elliptical tip to the tarsi (as in *scoparius*). Middle tarsi a little longer than their tibiae, blackened from the tip of the first joint. Hind tarsi black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings grayish or yellowish gray; veins yellowish, becoming brown on apical portion of the wing; costa yellow on inner edge, not at all enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing rather deeply notched at tip of fifth vein; anal angle prominent.

Female.—Face wide, white; front and orbital cilia as in the male; middle basitarsi with one large bristle above, but they seem to be without the bristle on the front surface that is found in the male; fore tarsi plain, with the last two or three joints black, fourth and fifth of about equal length; wings as in the male, except that the notch in hind margin at tip of fifth vein is smaller.

Redescribed from the single pair of type specimens; also 1 male from Massachusetts; 1 male taken at Ramsey, New Jersey, June 16; 1 male taken at Boston, Erie County, New York, July 10, 1910; and several males and females taken on Staten Island, New York, July 17, by W. T. Davis. [I took two males at Blue Ridge Summit, Pennsylvania, August 8, 1920.—J. M. A.]

Type locality.—Palisades, New Jersey, June.

This is very much like *scoparius* Loew, but differs greatly in the form of the lamellae of the hypopygium, still even these are alike in being very thick, smooth, and rather dark yellow, but there appear to be four lamellae in *quadrilamellatus* while there are only two in *scoparius*. The females look very much alike, but the fore tarsi are quite distinctly infuscated or black from the tip of the first joint, and the fore coxae have a large black spot at base in *scoparius;* while in *quadrilamellatus* the fore coxae are wholly yellow or nearly so and the fore tarsi are black at tip, not distinctly infuscated from tip of first joint, but usually distinctly yellow to base or even the tip of third joint.

Types.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 194. DOLICHOPUS LACINIATUS Coquillett.

Dolichopus laciniatus Coquillett, Canadian Entomologist, vol. 42, p. 42.

Male.—Length 5 mm.; of wing 4.75 mm. Face rather narrow, not as wide in the center as the width of the third antennal joint, silvery white, tinged a little with yellow on upper portion. Front violet or green, with a little white pollen along the orbits. Antennae black, first joint yellow below for more than half their width; third joint about as wide as long, pointed at tip. Inferior orbital cilia yellow, the black cilia descending about one-third of the eye height.

Thorax green with violet or bronze reflections; dorsum a little dulled with brown pollen, this pollen is sometimes gray, always so along the front; pleurae dulled with white pollen. Abdomen green with slight bronze reflections; the white pollen on its sides not very abundant. Hypopygium black; its lamellae of moderate size, somewhat round in outline, still with nearly a right angle at lower apical corner, whitish with moderately wide black border on apical margin, which is jagged and bristly on its lower half, fringed above with little hairs which are partly black and partly pale.

Fore coxae yellow with more or less brown at base even in front and with a rather large blackish spot at base on outer surface, in one specimen the outer surface is half blackish. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with long yellow hairs for half their length on lower inner edge, the longest of these hairs considerably longer than the width of the femora. Middle tibiae with three bristles below, two near apical, and one near basal third, their basitarsi with one large bristle above. Posterior tibiae a little stouter than the others; the usual glabrous stripe on upper surface wide and extending their whole length, but somewhat broken at apical third by two bristles and a few hairs; inner surface with another glabrous stripe which is separated from the upper one by a single row of hairs and extending two-thirds their length; the bristles on their lower surface nearly as large as those above. Fore tarsi (fig. 194) about one and three-fourths times as long as their tibiae, the first two joints taken together fully as long as the tibia; second joint about three-fifths as long as first, third three-fourths as long as second, fourth half as long as third, and fifth longer than fourth; fourth joint a little compressed, white, widest at tip; three first joints normal, yellow; fifth black, much compressed, somewhat oval, still a little truncate at tip, about three-fourths as wide as long; fourth and fifth joints fringed above with minute black hairs. Middle tarsi one and a third times as long as their tibiae, yellow, becoming darker from the tip of the first joint, nearly black at tip. Hind tarsi nearly as long as the middle ones and of the same color. Calypters and halteres yellow, the former with black cilia, still there are a few small yellow hairs among them and some longer ones below the black cilia.

Wings grayish; veins yellowish; costa with a small elongated enlargement at tip of first vein; last section of fourth vein bent near basal third; third and fourth veins nearly parallel and widely separated; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent but rounded; root of wing yellow.

Redescribed from the single male type in the United States National Museum, taken at Roxborough, Pennsylvania, June 7, 1908; 1 male taken at Dead Run, Virginia, June 23, and 1 male taken at Niagara Falls, Ontario, August 4.

Type.—Male, Cat. No. 12767, U.S.N.M.

No. 195. DOLICHOPUS OCCIDENTALIS Aldrich.

Dolichopus occidentalis Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 19, pl. 1, fig. 18.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 4.5–5.5 mm.; of wing 4.2–5 mm. Face pale yellow to ocher yellow, rather wide, narrowed below. Front shining green with a little yellowish pollen along the orbits. First antennal joint yellow, sometimes narrowly black above, second joint black, sometimes a very little yellowish below; third black, about as long as wide, rather rounded at tip. Lateral and inferior orbital cilia yellow, about seven of the upper cilia on each side black.

Thorax green with coppery reflections, which often form a narrow line on each side of the acrostichal bristles, sometimes there are also blue reflections on the dorsum, which is dulled with gray pollen along the front and yellowish on the disk; pleurae dulled with whitish pollen. Abdomen green with coppery reflections; the white pollen on its sides not conspicuous; the bristles on the hind margins of the segments long, especially those on fifth segment. Hypopygium black with metallic reflections on basal portion; its lamellae large, somewhat elliptical, nearly twice as long as wide, whitish with a black border, which is wide on apical and narrow on upper margin, jagged and bristly at lower apical corner, otherwise fringed with delicate black hairs.

Fore coxae yellow with conspicuous black hairs on their anterior surface and a blackish spot at base on outer side. Middle and hind coxae black with narrow yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, the black hairs on their sides reaching the lower edge, leaving only a narrow glabrous line below. Middle tibiae with three bristles below, two near apical and one near basal third, their basitarsi without a bristle above. Posterior tibiae a little thickened; the usual glabrous stripe on upper surface distinct, but somewhat broken; their inner surface sometimes with a brownish streak just inside of the inner row of large bristles near the middle. Fore tarsi (fig. 195*a*) about one and one-third times as long as their tibiae; first three joints slender, yellow, second about half as long as first, third half as long as second; fourth joint nearly as long as third, a little widened, as wide as long, yellowish with a black tip, sometimes mostly blackish; fifth joint black, much compressed, about as long as second and third taken together, fully two-thirds as wide as long, somewhat oval but straight below, fringed on upper edge with black hairs. Middle and hind tarsi one and a third times as long as their tibiae, black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 195) grayish, usually tinged with yellowish or brownish in front of third vein; costa with an enlargement, commencing before the tip of first vein and gradually tapering; last section of fourth vein bent just before its middle; third vein bent backward a little at its tip; hind margin of wing scarcely indented at tip of fifth vein; wing of rather equal width, the anal angle being prominent.

Female.—Face wide; third antennal joint shorter than wide; coxae and legs as in the male; fore tarsi plain, a little longer than their tibiae; fifth joint slightly longer than fourth; wing as in the male, except that the costa is not enlarged and the hind margin is more rounded, making the wing wider.

Redescribed from numerous specimens. J. M. Aldrich has taken it at Friday Harbor, Washington, May 28–July 14; Dewatto, Washington, June 7; Puyallup, Washington, June 17; and Mount Constitution, Orcas Island, Washington, July 7. A. L. Melander has taken it at several places in Washington, May 23–August 7; Hood River, Oregon, June 30; Salem, Oregon, July 4; Clayton and Abbotsford, British Columbia, August 9. H. S. Barber took it at Eureka, California, June 3, and Fieldbrook, California, May 31.

Type locality.—State of Washington.

Type.—In the collection of the University of Kansas. Melander and Brues report it from Idaho and Vancouver Island.

No. 196. DOLICHOPUS TALUS, new species.

Male.—Length 4–6 mm.; of wing 4.5–5 mm. Face rather wide, yellowish gray, nearly white below. Front shining green with bronze reflections. Antennae black, first joint yellow except the upper edge; third joint somewhat orbicular in outline, but the tip slightly pointed. Lateral and inferior orbital cilia yellowish, about five of the upper cilia on each side black.

Thorax green; the dorsum in one male has blue, in the other coppery reflections, it is dulled with rather thin yellowish gray pollen, pleurae with gray pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant. Hypopygium black; its lamellae large, somewhat elliptical in outline, but narrowing into the stem, twice as long as wide, whitish with a broad black border on apical and upper margins, jagged and bristly on lower apical corner, otherwise fringed with little black hairs.

Fore coxae yellow, a little darker at base, their anterior surface covered with white pollen and stiff black hairs. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia, but their lower edge with minute yellow hairs. Posterior tibiae only a little thickened; the glabrous stripe on upper surface distinct, but a little broken by a few hairs. Fore tarsi (fig. 196*a*), about one and three-fourths times as long as their tibiae; first three joints a little compressed but not widened except at tip of third, glabrous on the sides, which are covered with white pollen; first joint yellow with extreme tip and a line on upper and lower edges black; last four joints black; second joint fully two-thirds as long as first, third two-thirds as long as second; fourth somewhat triangular, nearly as wide at tip as long, scarcely one-third as long as third; fifth joint much compressed, as long as third and three-fourths as wide as long, somewhat oval, fringed above with little black hairs. Middle tarsi a little longer than their tibiae, black from the tip of the first joint, which has a large bristle near apical third. Hind tarsi blackened from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 196) grayish, sometimes tinged with yellowish brown in front of third vein; costa not enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing a little indented at tip of fifth vein and with a shallow sinus between the tips of fifth and sixth veins; anal angle prominent, the wing being of nearly equal width.

Female.—Face wider than in the male but not very wide for a female, grayish white; fore tarsi plain, black from the tip of the first joint, which is about as long as the three following joints taken together; third and fifth of nearly equal length, fourth a little shorter, third only a little shorter than second; middle basitarsi with a large bristle before its apical third, their tibiae with three bristles below, two near apical third and one a little before the middle (I can not see these bristles in the male, still they may be broken off); hind margin of wing more rounded than in the male, making the wing a little wider in the middle.

Described from 2 males and 3 females which I took in California; 1 at the foot of Portrero Grade, on Cottonwood Creek, San Diego County, April 21; the others on the Los Angeles River, Los Angeles, May 3.

Holotype and allotype.—In the United States National Museum.

Type.—Male, Cat. No. 23056, U.S.N.M.

No. 197. DOLICHOPUS COQUILLETTI Aldrich.

Dolichopus coquilletti Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 19, pl. 1, fig. 17.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5 mm.; of wing the same. Face moderately wide, slightly narrowed below, silvery white. Front green with bronze reflections, usually mostly bronze colored. First antennal joint yellow with a black upper edge, second and third joints black, third not much longer than wide. Lateral and inferior orbital cilia white, about eight of the upper cilia on each side black.

Thorax green; dorsum somewhat dulled with grayish pollen and usually with a median coppery vitta; pleurae with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum; sides of the first segment with long, slender, bent, black hairs which sometimes appear pale in certain lights. Hypopygium black; its lamellae large, somewhat elliptical, but tapering into the stem, twice as long as wide, whitish with wide black border on apical margin, which is jagged and bristly at the lower corner, fringed above with delicate brownish hairs.

Fore coxae yellow with a small blackish spot at base on outer side, their anterior surface covered with little black hairs, except the upper outer corner, where the hairs are minute and yellow. Middle and hind coxae black with yellow tips. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter without cilia below, but with minute yellow hairs on lower inner edge. Fore tibiae with four large bristles above and three below. Middle tibiae with a pair of large bristles at apical third below and rarely a smaller one near basal third, their basitarsi with a large bristle above at apical third. Posterior tibiae only slightly thickened; the large bristles on upper edge rather long, the outer row with eight, and the inner with six bristles, the usual glabrous stripe between them broad, but a little broken by a few hairs. Fore tarsi (fig. 197*a*) about one and one-third times as long as their tibiae, infuscated from the tip of the first joint, still the base of the second paler, only the last two joints black; first three joints slender, second and third each two-thirds as long as the joint preceding it, fifth scarcely as long as third; fourth half as long as fifth, a little widened at tip; fifth compressed, a little widened, widest at tip where it is a little less than half as wide as long, fringed above with little black hairs; pulvilli white. Middle tarsi about one and one-fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi black from the tip of the first joint, sometimes their basitarsi are brown or even black almost to the base. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 197) grayish, a little darker in front; costa not enlarged at tip of first vein; last section of fourth vein bent before its middle; hind margin of wing a little indented at tip of fifth vein and with a slight sinus nearly opposite the cross-vein; anal angle prominent, the wing being of somewhat equal width.

Female.—Face wider than in the male; fore tarsi plain, about one and one-fourth times as long as their tibiae, colored as in the male; fifth joint about as long as third, fourth a little shorter; bristles of the tibiae about as in the male, except that there are usually three bristles below on middle tibiae; wing about as in the male, except that the hind margin is more evenly rounded, there being no trace of the sinus, and the wing a little wider in the middle.

Redescribed from 1 type, and many specimens taken in the following localities: Moscow, Bellevue, and Grangeville, Idaho, June 23–27; Hood River, Oregon, August 9; Indian School, Pyramid Lake, Nevada, July; Mono Lake, California, July 21; Seattle, Washington. All the above were taken by J. M. Aldrich. Thompson took a male at Woodside, California, April 15. C. F. Baker took it in Colorado. A. L. Melander took it in many places in Washington, May 15–August 15, and at Kermeos, British Columbia, July 19.

Type locality.—California. J. M. Aldrich reports it abundant at Moscow, Idaho. Melander and Brues report it from Vancouver Island.

Type.—In collection of J. M. Aldrich.

The only difference I can see between the females of *coquilletti* and *talus* is that the former has the third vein only slightly bent backward at its tip, while in *talus* the third vein is distinctly bent back at its tip; this is a poor character to depend on, as it may vary some in both species.

No. 198. DOLICHOPUS PLUMOSUS Aldrich.

Dolichopus plumosus Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 18, pl. 1, fig. 16.

Male.—Length 4.5–5 mm.; of wing 4.5–4.75 mm. Face moderately narrow, pale yellow, sometimes almost golden yellow. Front shining green. First two antennal joints yellow, second narrowly black at tip; third joint black, somewhat conical in outline, pointed at tip, about as long as wide. Lateral and inferior orbital cilia yellowish, about six of the upper cilia on each side black.

Thorax green with coppery reflections; dorsum a little dulled with gray pollen, which is more or less yellowish brown on the disk; pleurae dulled with white pollen. Abdomen green with more or less coppery reflections; the white pollen on its sides extending upon the dorsum but not conspicuous. Hypopygium black with green reflections on basal half; its lamellae large, nearly twice as long as wide, somewhat elliptical in outline, but narrowing into the stem, white or yellowish with a black border, which is broad on apical, narrow on upper margin, jagged and bristly at apex, fringed with black hairs above and a few pale ones below.

Fore coxae yellow, usually wholly so, their anterior surface covered with white pollen and delicate little yellow hairs with a few black ones along inner and outer edges. Middle and hind coxae blackish with yellow tips. Femora and tibiae yellow. Fore femora with long black hairs on upper edge of basal half, the longest being nearly as long as the width of the femora; they also have long black hair on apical half of posterior side; these are sometimes yellowish. Middle and hind femora each with one preapical bristle, and with delicate little yellow hairs on the lower edge, the hind pair without cilia below. Middle tibiae with a pair of bristles below near apical third and usually with a smaller one near basal third, their basitarsi with a bristle near apical fourth. Posterior tibiae thickened in the middle, their inner surface entirely covered with black hairs. Fore tarsi (fig. 198*a*) one and a half times as long as their tibiae, sometimes blackened from the tip of the first joint, in others the first three joints are yellow with black tips, last two joints always black; first joint three-fourths as long as the tibiae, second half as long as first, third half as long as second, slightly widened at tip; fourth joint shorter than third, a little compressed, about as wide as long; fifth joint compressed, nearly as long as third and fourth taken together, about two-thirds as wide as long, somewhat oval, but truncate at tip, fringed above with black hairs; empodium white, plume-like, forming a white tip to the tarsi. Middle tarsi a little longer than their tibiae, black from the tip of the first joint. Hind tarsi black, usually the first joint is mostly yellow with only the tip black, but sometimes it is blackened almost to the base. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 198) grayish, the front slightly darker; costa with a very small enlargement at tip of first vein; last section of fourth vein a little bent before its middle; hind margin of wing a little indented at tip of fifth vein and with a small sinus each side of the tip of sixth vein, leaving a slight lobe at the tip of sixth vein, somewhat narrowed from here to the anal angle, which is prominent but narrow.

Female.—Face wide, grayish white; fore coxae with more black hairs than in the male; fore tarsi plain, a little longer than their tibiae, infuscated from the tip of the first joint; fifth joint nearly as long as third, fourth distinctly shorter; fore femora with a few longer hairs at base of upper edge but they are much shorter than in the male; wings nearly evenly rounded on the hind margin; anal angle prominent but rounded off.

Redescribed from 11 males and 10 females taken in the State of Washington from June 19–July 23; they were taken at Olga and Friday Harbor by J. M. Aldrich and at Olympia by Prof. Trevor Kincaid. Also 6 males taken by A. L. Melander, one at Dewatto, Washington, Aug. 15, and the others at Lake Crescent, Piedmont, Washington, July 26.

Type.—In University of Kansas, from the State of Washington.

No. 199. DOLICHOPUS AINSLIEI, new species.

Male.—Length 5 mm.; of wing the same. Face rather wide, a little narrowed below, silvery white. Front green, not very bright. Antennae yellow; third joint mostly blackish, somewhat orbicular in outline, rather rounded at tip. Lateral and inferior orbital cilia yellowish, about seven of the upper cilia on each side black.

Thorax green with more or less bronze reflections, which form a median vitta on the dorsum in some specimens; dorsum dulled with rather thick gray pollen, which is often more brownish on the disk; pleurae dulled with white pollen. Abdomen green with coppery reflections, dulled with grayish pollen. Hypopygium black; its lamellae (fig. 199*a*) rather small, somewhat elongate oval, but rather pointed at tip, about two and a half times as long as wide, white with a black border on apical margin, very narrowly black on upper edge, jagged and bristly at tip, fringed above with a few black hairs.

Coxae yellow, middle ones a little blackened on outer side; fore coxae with silvery pollen and delicate little yellow hairs on the anterior surface; sometimes there are a few very minute black ones on inner edge. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, ciliated on lower inner edge with a few delicate white hairs, which are nearly as long as width of femora. Posterior tibiae thickened; the usual glabrous stripe on upper surface distinct but somewhat broken, their inner surface glabrous for more than half their length. Fore tarsi (fig. 199*b*) about one and a half times as long as their tibiae; first and second joints yellow, normal, second three-fourths as long as first; last three joints compressed, third and fourth black, fifth white; fourth joint about half as long and not as wide as third, third and fourth fringed above with black hairs; fifth joint slightly longer than fourth, oval. Middle tarsi one and a third times as long as their tibiae, infuscated from the tip of the first joint, still the most of second and fifth joints are yellowish, fifth half as long as fourth. Hind tarsi about one and a fourth times as long as their tibiae, infuscated from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 199) tinged with yellowish in front of third vein, sometimes only slightly so; costa with a conspicuous elongated enlargement at tip of first vein; last section of fourth vein a little bent near its basal third; hind margin of wing scarcely indented at tip of fifth vein, but with a sinus between the tip of sixth vein and the anal angle so as to form a prominent lobe at anal angle.

Female.—Agrees with the male in width of the face, form of the antennae, and in general color; the fore coxae have more black hairs than those of the male; fore tarsi plain, about one and a third times as long as their tibiae, infuscated from the tip of the first joint; hind margin of the wing rather broadly and evenly rounded, the anal angle being rounded, although rather prominent. The fore tibiae have a narrow glabrous line on upper surface, which is not found in the male.

Described from 3 males and 3 females. Two males were taken at Olmstead, Minnesota, June 15, 1905, by C. N. Ainslie, in whose honor they are named; and 1 male and the females which I took at Irving, Erie County, New York, Aug. 26, 1917.

Type.—Male, Cat. No. 23057, U.S.N.M., from Minnesota.

No. 200. DOLICHOPUS FUNDITOR Loew.

Dolichopus funditor Loew, Neue Beitr., vol. 8, 1861, p. 22; Mon. N. Amer. Dipt., pt. 2, 1864, p. 66.—Aldrich, Kansas University Quarterly, vol. 2, 1893, p. 20, pl. 1, fig. 10.

Male.—Length 4–5 mm.; of wing 4.3 mm. Face narrow, a little wider above, silvery white. Front shining green, usually with blue reflections. Antennae yellow; third joint scarcely infuscated at tip, a little longer than wide, pointed at tip. Lateral and inferior orbital cilia yellowish white, about five of the upper cilia on each side black.

Thorax green with blue or purple reflections; dorsum dulled with gray or yellowish gray pollen; the humeri, sides of the scutellum, and sutures of the pleurae yellow. Abdomen green with slight bronze reflections; the white pollen on its sides not very abundant. Hypopygium black, with its upper side more or less yellow; its lamellae of moderate size, somewhat orbicular in outline, white with moderately wide black border on apical and upper margins, jagged and bristly at apex, fringed above with delicate little black hairs.

All coxae yellow; fore coxae with delicate white hairs on their anterior surface, middle pair also with white hair, except a few black ones at tip. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with white hairs, which are about three-fourths as long as the width of the femora and do not reach the tip; they are of nearly equal length. Middle tibae with three bristles below, two near apical third and one bristle near basal third, their basitarsi with a rather small bristle above. Posterior tibiae scarcely thicker than the others, their inner surface with a glabrous space extending from near the base to beyond their middle. Fore tarsi one and three-fourths times as long as their tibiae, the first two joints together as long as the tibia; first three joints slender, yellow, of decreasing length; fourth and fifth joints compressed, fourth black, fringed above with rather long black hairs, and a little shorter than either third or fifth joints, which are of nearly equal length; fifth joint white and fringed above with white hairs, somewhat oval; middle and hind tarsi darkened toward their tips; middle pair one and a fourth, hind one and a third times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings grayish, sometimes tinged with yellowish brown along the front; costa and veins yellowish brown; costa scarcely enlarged at tip of first vein; last section of fourth vein a little bent near its basal third; tips of third and fourth veins widely separated; hind margin of wing nearly evenly rounded, scarcely indented at tip of fifth vein; anal angle rounded, not prominent.

Female.—Face rather wide, yellowish gray; fore tarsi plain, one and a fourth times as long as their tibiae, darkened toward the tip, their joints of regularly decreasing length; middle basitarsi without a bristle above, hind femora without cilia below; otherwise as in the male.

Redescribed from the type material and 4 males and 1 female. One male at Merchantville, New Jersey, June 28; 1 at Philadelphia, Pennsylvania, June 30; 1 in Montgomery County, Pennsylvania, July 4; 1 at Scotts Run, Virginia, August 2; the female at Niagara Falls, New York, September 16; and 1 male at Lafayette, Indiana, June 30.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts, from "Middle States."

No. 201. DOLICHOPUS FUNDITOR, var. DISTINCTUS, new variety.

Male.—Length 5 mm.; of wing 4.75 mm. This differs from *funditor* Loew in having the third antennal joint nearly twice as long as wide and in the form of the fore tarsi; the variety *distinctus* (fig. 201) has the second joint two-thirds as long as first, third three-fourths as long as second and a little shorter than fourth and fifth taken together, fourth and fifth of nearly equal length, and taken together about equal to second in length, being much shorter than first; while *funditor* (fig. 200*a*) has the second three-fourths as long as first, third two-thirds as long as second and about equal to the fifth in length and nearly as long as first, the fourth being shorter. The fourth is more compressed and widened in *funditor* than in *distinctus*.

These differences are not very conspicuous and may prove to be variable when more material is found, but for the present I think this form should be considered as a distinct variety of *funditor*, as it will be better to make this a synonym than to separate the two if they prove to be distinct.

Described from 2 males, 1 taken at Opelousas, Louisiana (Pilate, from Hough through Aldrich), and 1 at Merchantville, New Jersey (C. W. Johnson), June 28.

Type.—Male, Cat. No. 23058, U.S.N.M., from Opelousas, Louisiana.

No. 202. DOLICHOPUS WILLISTONII Aldrich.

Dolichopus willistonii Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 22, pl. 1, fig. 23.

Male.—Length 4.5–6 mm.; of wing 5–5.5 mm. Face quite wide, narrower and silvery white below, more yellowish gray above. Front shining green with blue or bronze reflections, sometimes mostly violet. Antennae yellow; third joint slightly darkened at tip, about as long as wide, pointed. Proboscis yellowish brown; palpi brown. Lateral and inferior orbital cilia whitish, three or four of the upper cilia on each side black.

Thorax green, usually with bronze or coppery reflections, sometimes mostly violet; dorsum with yellowish gray pollen, which is more abundant along the front; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant. Hypopygium black with green reflections on the basal portion; its lamellae of moderate size, somewhat triangular in outline, but rounded at tip, longer than wide, whitish with rather wide black border on apical margin, jagged and bristly at upper apical corner, otherwise fringed on the apical margin with black hairs, lower edge with a few white hairs.

Coxae yellow; middle pair with two blackish spots on outer surface; fore coxae have on their anterior surface minute yellow hairs, except along the inner edge and near the apex where the hairs are black. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter with only very minute yellow hairs on lower inner edge. Middle tibiae with three large bristles below, two near apical and one near basal third, their basitarsi with one large bristle above near apical third; their inner surface glabrous from the base to apical third; the usual glabrous stripe on upper surface distinct, it is somewhat broken by little hairs and does not quite reach the base but extends to the tip. Fore tarsi (fig. 202*a*) nearly one and three fourths times as long as their tibiae; first two normal, yellow, second about one-fourth as long as first; last three joints compressed; third joint scarcely as long as second, white, about half as wide at apex as long, fringed above with a few black hairs and with several on the sides and with two long ones at upper apical corner; fourth joint black with a white tip, a little longer than the second, nearly three-fourths as wide as long, fringed above on the black portion with long, dense, black hairs, which give it something of a triangular appearance; fifth joint formed of two parts, the lower part about equal to the fourth joint in size, nearly twice as long as wide, wholly black; upper portion as long as second and third joints taken together, a little less than half as wide as long, black with a brownish luster in certain light and with the apex silvery white, the black portion fringed above with long dense black hairs. Middle tarsi nearly one and a third, hind tarsi one and three-fourths as long as their tibiae, infuscated from the tip of the first joint, still the base of the second and third joints quite yellowish. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 202) grayish, veins brown, inner half or more of the costa yellow; costa with a small enlargement at tip of first vein and tapering to its tip; third vein bent backward at tip but tips of third and fourth widely separated; last section of fourth vein a little bent near its basal third; hind margin of wing a little indented at tip of fifth vein; anal angle prominent.

Female.—Face wide, more white than in the male; fore tarsi plain, yellow, a little infuscated toward their tips, about one and a fourth times as long as their tibiae, second joint slightly more than half as long as the first; third a little shorter than the second and a little longer than the fourth; fifth about equal to the fourth in length; middle basitarsi with one or two very small bristles beyond its middle, usually without a larger bristle above, still there is sometimes a rather small bristle above beyond the middle; costa without an enlargment; third and fourth veins nearly straight beyond the bend in fourth, still the third is bent backward a little at tip.

Redescribed from the type material in the Aldrich Collection (7 specimens); also 3 males and 2 females from Lawrence, Kansas; 1 male taken at Wolfe City, Texas, May, 1906, by F. C. Bishopp; and 2 males taken by R. H. Beamer, 1 in Linn County, Kansas, and the other in Miami County, Kansas.

Type material taken in Lawrence, Kansas; part is in the University of Kansas, part in the collection of J. M. Aldrich.

No. 203. DOLICHOPUS SEXARTICULATUS Loew.

Dolichopus sexarticulatus LOEW, Mon. N. Amer. Dipt., pt. 2, 1864, p. 62.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5–6 mm.; of wing 4.5–5.5 mm. Face rather wide, a little narrowed below; yellowish white, more yellow above. Front green with bronze reflections, sometimes more blue-green, a little dulled with yellowish pollen. Antennae yellow; third joint infuscated at tip, about as long as wide, pointed. Lateral and inferior orbital cilia yellowish, about four of the upper cilia on each side black.

Thorax green with bronze reflections and a median coppery vitta on the dorsum, which is dulled with yellowish pollen, this pollen is more gray along the front; pleurae dulled with white pollen. Abdomen green with coppery or bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium with its basal portion metallic green, its apical half more yellow; lamellae of moderate size, somewhat triangular, but rounded at apex, whitish with a narrow black border which shades into the white; jagged and bristly at lower apical corner, otherwise fringed on apical margin with little black hairs.

Coxae yellow; middle and hind pairs with one large and one small black spot on the outer surface; anterior surface of fore coxae with white pollen and minute yellow hairs. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare on their lower half, which has only a few minute yellow hairs. Middle tibiae with two large bristles on lower anterior edge, their basitarsi with one rather small bristle near apical third of upper edge. Posterior tibiae thickened, especially on basal half; the usual glabrous stripe on upper surface broad but broken by the irregular placing of the large bristles and a few hairs; inner surface excavated on basal half, which is glabrous and covered with yellow pollen. Fore tarsi (fig. 203*a*) twice as long as their tibiae, the first joint being four-fifths as long as the tibia; first three joints rather slender, yellow, second joint half as long as the first, third a little shorter than the second; last two joints compressed; fourth nearly three-fourths as long as third, about half as wide at apex as long, wholly black, fringed above with little black hairs and with two long hairs at upper apical corner; fifth joint formed of two parts, the basal portion about as long as the fourth joint and a little wider, base deep black, a little more than apical half white, claws placed near the middle of this basal portion on its lower edge, attached to the upper apical corner of basal part is the second part, an appendage which is narrow at its base, widening apically, somewhat spatulate, deep black for a little more than half its length, with the apical part white; this appendage has the appearance of a sixth joint, it is much smaller than the basal portion, being little more than half as long and much more slender. Middle and hind tarsi infuscated from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 203) grayish; costa scarcely enlarged at tip of first vein, still rather thick from this point to its tip; second and third veins running rather close together and both bent backward at their tips, third widely separated from fourth; last section of fourth vein a little bent just beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein; anal angle rather prominent.

Female.—Face wide, grayish white; coxae, femora, and general color as in the male; fore tarsi plain, about one and a fourth times as long as their tibiae, first joint about as long as the three following joints taken together, fourth and fifth joints of nearly equal length; wing about as in the male, except that the second vein is straight and the third vein is nearly so.

Redescribed from 5 males and 3 females from Louisiana; 1 pair from Opelousas, Louisiana, 1897 (Pilate); and 1 male taken by C. T. Greene at Falls Church, Virginia, June 22.

Type locality.—District of Columbia. Melander and Brues report it from Illinois and Louisiana.

No. 204. DOLICHOPUS SPHAERISTES Brues.

Dolichopus sphaeristes BRUES, Ent. News, vol. 12, 1901, p. 44.

The following is a copy of the original description.

Bright green; antennae, except part of third joint, yellow; femora yellow; cilia of inferior orbit pale; tegular cilia black; fourth longitudinal vein not broken; hind tibiae and tarsi at base yellow; fourth and fifth joints of male fore tarsi enlarged, black, the fifth bilobed and with a large snow-white empodium.

Male.—Length 6 mm., of wing 5 mm.; bright coppery green, moderately shining. Face rather narrow, ochreous, much lighter on the lower fourth. Palpi light yellow. Antennae yellow except a black spot at insertion of the arista and the infuscation of the tip of third joint. Third joint short, oval, obtusely rounded at tip. Arista black, about one and one half times the length of the antennae, distinctly pubescent. Vertex shining green. Postocular cilia, except three upper ones pale yellow. Thorax slightly yellowish pollinose in front. Pleurae darker and white pollinose. Coxae pale yellow except a black stain on middle pair externally. Anterior ones bare except for a row of black hair along the apical external edge. Middle ones sparsely black-hairy anteriorly. Abdomen green at base and coppery posteriorly, last segment and hypopygium black. Internal appendages of hypopygium ferruginous. Lamellae gradually narrowed toward the base and obliquely arcuate at apex; white, narrowly and sharply bordered with black on the apical half; strongly bristly at the apical angle, elsewhere almost devoid of bristles; with a region of black punctures near anterior angle. Legs yellow except last two joints of anterior tarsi, which are black; and four posterior tarsi, which are gradually infuscated beyond tip of first joint. Last two joints of anterior tarsi (fig. 204) much enlarged and fringed with black hair on anterior edge. The fifth slightly bilobed at apex, part of the joint forming a sort of appendage. Empodium very large, snow-white, almost as large as the fifth joint. Posterior tibiae greatly thickened, especially near base, as stout as the femora. Each tibia has an elongate bare space on inner side of basal half. Wings hyaline, rather narrow at base.

Costa distinctly thickened at tip of first vein, fourth not sharply angulate. Incision at tip of fifth vein well marked.

Austin, Texas, May, 1900.

This species is readily recognized by the peculiar ornamentation of the male fore tarsi and the configuration of fore [hind] tibiae. The fore tarsi approach most closely to *D. sexarticulatus* Loew, from which they differ by their very small appendages. It is a peculiar form.

I have not seen the species; the drawing was made by Mr. Cole from the type specimen in the collection of A. L. Melander.

No. 205. DOLICHOPUS TERMINALIS Loew.

Dolichopus terminalis Loew, Cent., vol. 5, 1864, No. 78.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Dolichopus germanus Wheeler, Psyche, vol. 5, 1900, p. 341.

Male.—Length 4–4.5 mm.; of wing 3.2–4 mm. Face narrow, a little wider above, silvery white. Front shining green with more or less blue reflections. Antennae yellow; third joint infuscated toward its tip, about as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia white, about six of the upper cilia on each side black.

Thorax green; dorsum sometimes with coppery reflections, which form a median vitta, and with a little gray pollen which is mostly found along the front edge; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides quite abundant. Hypopygium black, its basal portion with green reflections and white pollen; its lamellae rather large, somewhat oval, nearly twice as long as wide, white with a rather narrow black border on apical and upper margins, jagged and bristly at apex, which is somewhat pointed, fringed above with delicate black hairs.

Coxae wholly yellow; fore coxae with white pollen and numerous delicate white hairs on their anterior surface; middle coxae with an unusually long bristle on outer surface, it being one-third longer than that on hind coxae femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter nearly bare below, still with a few minute yellow hairs near lower edge. Middle tibiae with three bristles below, two near apical third and one just before the middle, their basitarsi with a bristle, which is not very large, on upper surface near apical third. Posterior tibiae not thickened; the usual glabrous stripe on upper surface not very distinct. Fore tarsi (fig. 205*a*) one and a half times as long as their tibiae, yellow with the last joint black, contrasting strongly with the pale joints preceding it and a very little compressed, scarcely as long as fourth, somewhat oval; first joint about as long as the three following joints taken together, second two-thirds as long as first, third only a little shorter than second and fully as long as fourth and fifth taken together. Middle tarsi one and one-fourth times as long as their tibiae, black from the tip of the first joint. Hind tarsi black from the tip of the first joint, which is usually yellow, but sometimes more brownish yellow. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 205) grayish; costa without enlargement at tip of first vein; last section of fourth vein bent before its middle, the last portion straight; third vein bent backward at tip; hind margin of wing scarcely indented at tip of fifth vein, and nearly evenly rounded, so that the wing is somewhat narrowed at its base, the anal angle not being prominent.

Female.—Face twice as wide as in the male, silvery gray or almost white; fore tarsi about as in the male, only a little shorter and fifth joint scarcely dilated, they are a little darker in color in my specimens; middle basitarsi without a bristle above; wing about as in the male.

Redescribed from the type material of *terminalis* and one of the type specimens of *germanus;* also specimens from Algonquin, Illinois, (Nason), July 10 and 23; South Dakota; Wisconsin; Grand Island, Erie County, New York, July 23 and August 17; Tonawanda, New York, August 4; Ridgeway, Ontario, July 23–August 13.

Type locality of *terminalis* Genesseo, New York, and that of *germanus* Milwaukee County, Wisconsin (which was described from 15 males and 18 females).

Type of *terminalis* in Museum of Comparative Zoology, that of *germanus* in American Museum.

No. 206. DOLICHOPUS CANALICULATUS Thomson.

Dolichopus canaliculatus Thomson, Eugenies Resa, 1868, p. 512.—Osten Sacken, Western Diptera, 1877, p. 315.

Male.—Length, 5 mm.; of wing, 4.5–5 mm. Face narrow, a little wider above, silvery white, a little tinged with yellow above. Front green with more or less violet reflections, dulled with thick yellowish pollen. Antennae yellow; third joint blackish, except at base, about one and a half times as long as wide, pointed at tip. Palpi and proboscis yellow. Lateral and inferior orbital cilia whitish, more yellow above, about four of the upper cilia on each side black.

Thorax green; dorsum often with violet reflections, covered with thick yellowish pollen, the median line and lateral edges a little more shining; pleurae dulled with gray pollen. Abdomen shining green with coppery reflections on the hind margins of the segments; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae (fig. 206*a*) large, somewhat triangular in outline, with a large and another small emargination on the apical edge, white with the apical corners and narrow upper margin black, lower corner with a branched bristle, upper margin and apical edge as far as the large emargination fringed with black hairs.

Fore coxae yellow with white pollen and minute white hairs on anterior surface; middle and hind coxae black on the outside, yellow on inner side and at tip. Femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated with white hairs on lower inner edge for their entire length, the longest being near the tip and about three-fourths as long as width of femora. Middle tibiae with one bristle on lower anterior edge near apical third, their basitarsi without a bristle above. Posterior tibiae a little thickened; the usual glabrous stripe on upper surface distinct, but nearly broken near the tip and widening again at apex of tibia, their inner surface with a glabrous spot near the base which is usually darker yellow than the rest of the tibia. Fore tarsi one and three-fourths times as long as their tibiae, first three joints yellow and of nearly equal length; first joint normal, second and third very thin and with their sides glabrous, third sometimes brownish; fourth joint white, a little longer than the width of the tip, somewhat triangular, and with two or three long hairs above; fifth joint much compressed, somewhat orbicular in outline, but straight below, about one-third as long as the third. Middle tarsi about one and a fourth times as long as their tibiae, brownish yellow, becoming darker toward their tips. Hind tarsi black from the tip of the first joint, which is dark yellow. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 206) grayish; costa with a small elongated enlargement at tip of first vein; last section of fourth vein bent just before its middle; third vein bent backward at tip; hind margin of wing indented at tip of fifth vein, nearly evenly rounded, the anal angle being rounded, not at all prominent.

Female.—Agrees with the male in general color of all parts, in having thick pollen on the mesonotum, and in the form of the wings, except that the costa has no enlargement. Face about twice as wide as in the male, third antennal joint shorter; fore tarsi plain, a little longer than their tibiae, first joint about as long as the two following taken together, third a little shorter than second, fourth and fifth of about equal length, and each about half as long as second, first four joints dark yellow, only the fifth black; hind tibiae scarcely thickened and without the glabrous spot on inner surface.

Redescribed from numerous males and females from California, taken in Sonoma, Alameda, Marin, and San Mateo Counties, May to November.

Type locality.—California, the San Francisco region.

Type.—In Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 207. DOLICHOPUS TENUIPES Aldrich.

Dolichopus Aldrich, American Naturalist, 1894, p. 35 (describes courtship).
Dolichopus tenuipes Aldrich, Kans. Univ. Quart., vol. 2, 1894, p. 155.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.

Male.—Length 5–5.5 mm.; of wing 4–5 mm. Face wide, a little narrowed below, silvery white. Front green, dulled with grayish white pollen. Antennae yellow, third joint blackish with the base yellow, about as long as wide, pointed at tip. Lateral and inferior orbital cilia white, about four of the upper cilia on each side black.

Thorax green with bronze reflections; dorsum covered with thick brownish gray or yellowish pollen; pleurae dulled with white pollen. Abdomen green with more or less bronze reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae rather large, elliptical, but rather pointed at tip, white with a narrow brown border on the apical margin, fringed with little brown hairs on the apical edge and with pale hairs above and below.

Coxae, femora and tibiae yellow; middle and hind coxae more or less blackened on outer surface. Fore coxae with silvery pollen and minute yellow hairs on anterior surface, a few black hairs along the inner edge. Middle and hind femora each with one preapical bristle, the latter without cilia below. Middle tibiae with one bristle below, their basitarsi without a bristle above. Posterior tibiae thickened, their inner surface with a short glabrous spot, which does not reach the base and occupies about one-fourth their length. Fore tarsi (fig. 207*a*) twice as long as their tibiae; second joint one and a fourth times as long as the first, second and third very thin, glabrous on their sides, brownish, third about equal to the first in length; fourth joint scarcely wider than the third and very short, about as long as wide, with two long hairs above; fifth joint very thin, black, compressed, oval, extending far beyond the claws which are placed near its basal third, fringed toward the tip with a few minute black hairs, about two-thirds as long as third joint. Middle tarsi one and one-fourth times as long as their tibiae, brownish almost from the base, but scarcely black even at tip. Hind tarsi blackish from the tip of the first joint, which is dark yellow. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 207) grayish; costa black, without distinct enlargement at tip of first vein, although somewhat thicker at that point and tapering to its tip; last section of fourth vein bent just beyond its basal third; third vein bent backward at its tip; hind margin of wing only a little indented at tip of fifth vein, rather evenly rounded, the anal angle not being prominent.

Female.—Face a little wider than in the male, and more grayish; coxae and wings as in the male; hind tibiae without the glabrous spot on inner surface and a little less thickened; middle tibiae with three bristles below, two near apical third and one near basal third, their basitarsi without a bristle above; fore tarsi plain, about one and a fourth times as along as their tibiae, brownish, first joint as long as the three following joints taken together, fifth longer than fourth: middle and hind tarsi more black than in the male.

Redescribed from the type material in the collection of J. M. Aldrich, and several males. These were taken at Moscow, Vollmer (now Troy) and Potlatch, Idaho, Aug. 24–Oct. 6; Oakland, California, June 7; Fairfax, Marin County, California, Oct. 15, and Pullman, Washington, Sept.

Type locality.—Moscow, Idaho. Melander and Brues report it from California.

No. 208. DOLICHOPUS DIGITUS, new species.

Male.—Length 4.75 mm.; of wing 4.5 mm. Face wide, its sides parallel, silvery white. Front shining green with bronze reflections. Antennae yellow; third joint somewhat orbicular, still a little pointed at tip, which is a little infuscated. Lateral and inferior orbital cilia yellowish, about four of the upper cilia on each side black.

Thorax green; dorsum with three broad reddish coppery stripes, the lateral ones inclosing a blue spot at the suture (the metallic coloring is likely to vary in different individuals), covered with an almost invisible yellowish pollen, which is more gray and conspicuous along the front; pleurae dulled with white pollen; bristles of the thorax inserted in small black dots. Abdomen green with coppery reflections, especially on the apical segments; the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 208*a*) rather large, somewhat triangular, white with a narrow black apical border, jagged and bristly on lower corner, fringed on the rest of the apical margin with little brown hairs.

Coxae, femora, and tibiae yellow; middle coxae with outer surface mostly blackish, anterior surface of fore coxae with silvery pollen and very minute pale hairs and a few black ones on upper half of inner edge. Middle and hind femora each with one preapical bristle, the latter without cilia, but with a row of minute yellow hairs on lower inner edge. Middle tibiae with three bristles below, two near apical third and one near basal third, their basitarsi without a bristle above. Posterior tibiae a little thickened, especially near their base; the usual glabrous stripe on upper surface distinct and reaching the tip; inner surface near the base with a glabrous spot extending one-third the length of the tibiae. Fore tarsi (fig. 208*b*) nearly twice as long as their tibiae, the first two joints taken together fully as long as the tibia; first joint but little longer than the two following taken together; first three joints and base of fourth yellowish, most of fourth and the whole of fifth black; fifth compressed and with a finger-like projection on upper edge extending over the claws, this projection is two-thirds as long as the main portion of the joint and a little enlarged at its tip. First two joints of middle and hind tarsi scarcely infuscated at tip (the remaining joints of middle tarsi missing in the type specimen). Calypters and halteres yellow, the former with black cilia with one or two pale hairs among them.

Wings (fig. 208) grayish, very slightly tinged with yellowish brown along the front; costa without an enlargement at tip of first vein; last section of fourth vein bent beyond its basal third; hind margin of wing scarcely indented at tip of fifth vein, nearly evenly rounded, the anal angle being rounded, not prominent.

Described from male taken in Louisiana by Pilate (from the J. M. Aldrich collection).

Type.—Male, Cat. No. 23059, U.S.N.M.

No. 209. DOLICHOPUS DUPLICATUS Aldrich.

Dolichopus duplicatus Aldrich, Kansas Univ. Quart., vol. 2, 1893, p. 18, pl. 1, fig. 21, and p. 157.

Male.—Length 4.75–6 mm.; of wing 4.5–5.5 mm. Face rather wide, a little narrowed below, yellowish or yellowish white. Front green, the ground color often nearly concealed by yellowish pollen. First two antennal joints yellow; third black, as long as wide, obtusely pointed at tip. Lateral and inferior orbital cilia yellowish, about four of the upper cilia on each side black.

Thorax green; dorsum thickly covered with yellowish pollen, which is thinner on the posterior portion, suture metallic brown with a line of the same color running back over the root of the wings; pleurae dulled with white pollen. Abdomen green with coppery reflections on the posterior margins of the segments; the white pollen on its sides abundant. Hypopygium black; its lamellae (fig. 209*a*) very large, whitish, sometimes a little tinged with yellow; twice as long as wide, with a deep emargination on the upper edge, which extends a little less than half the width of the lamellae, as wide on the margin as it is deep and somewhat triangular, thus forming two lobes on upper edge, the inner or basal one rather widely bordered with black on outer edge and fringed with delicate but rather long black hairs, outer lobe rather pointed above, narrowly bordered with brown, deeply incised on apical edge, which is fringed with delicate black hairs, there being no branched bristles such as are usually found on the jagged edge of the lamellae; lower edge fringed with short black hairs, which become shorter and pale near the base of the lamella.

Coxae, femora and tibiae yellow. Middle coxae largely blackish on outer surface; anterior surface of fore tarsi with little black hairs and a few minute yellow ones on outer corner near the base. Middle and hind femora each with one preapical bristle, the latter nearly bare below. Middle tibiae with one large bristle below, their basitarsi with one rather large bristle above near apical third. Posterior tibiae very little thicker than the others; the usual glabrous stripe on upper surface not conspicuous, their inner surface with a narrow glabrous streak at basal third which may be easily overlooked. Fore tarsi (fig. 209*b*) about one and a half times as long as their tibiae; the first two joints being nearly as long as the tibia; three first joints brownish yellow, last two black; second joint three-fourths as long as first, third two-thirds as long as second, slightly widened at tip; fourth joint one-third as long as third, somewhat triangular, about as wide at tip as it is long; fifth joint much compressed, about as long as third and nearly as wide, somewhat oval; fourth and fifth joints fringed above with little black hairs. Middle tarsi one and a fourth times as long as their tibiae, black from the tip of the second joint, still the second joint is often brownish. Hind tarsi blackened from the tip of the first joint, their basitarsi with two large bristles above. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 209) grayish; costa not enlarged at tip of first vein; last section of fourth vein bent at its middle; hind margin of wing indented at tip of fifth vein, rather evenly rounded, the anal angle being rounded, not prominent.

Female.—Face wider than in the male; antennae, coxae and wings as in the male, except that the wing of the female is more tinged with brown, especially in front of third vein; the middle tibiae have three bristles below, two near apical third and one near basal third, their basitarsi without a bristle above; hind basitarsi with one large bristle above; fore tarsi plain, a little infuscated toward their tips, sometimes quite brownish from their base on upper edge, a little longer than their tibiae, fourth and fifth joints of about equal length.

Redescribed from 11 males and 3 females from the collection of J. M. Aldrich. Two were taken at Keyport, Washington, August 7; 3 at Seattle, Washington; 5 at Moscow, Idaho; 2 at Viola, Idaho; and 2 at Horseshoe Bend, Idaho, June 24. There is a specimen in the United States National Museum taken on the campus at Stanford University, California, September 26, 1909. A. L. Melander took a female at Thompson, Montana, Augnst 25.

Type locality.—Washington.

Type.—In the collection of the University of Kansas.

No. 210. DOLICHOPUS GRANDIS Aldrich.

Dolichopus grandis ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 21, pl. 1, fig. 22.

Male.—Length 6.8–7.8 mm.; of wing 7–7.3 mm. Face rather wide, white, yellowish above. Front shining green with slight bronze reflections. Antennae yellow; third joint a little infuscated at tip, scarcely as long as wide, pointed at tip. Lateral and inferior orbital cilia yellowish white, about five of the upper cilia on each side black.

Thorax green with coppery reflections, which form three vittae on the dorsum, the median one narrow and sharply defined, the lateral ones broad; dorsum somewhat dulled with yellowish pollen, which is most conspicuous along the front; pleurae dulled with white pollen. Abdomen green with coppery reflections; the usual white pollen forming large conspicuous spots on the sides of the segments; those on the sides of the fifth segment are sharply defined, large, somewhat oval, and appear to be on a white ground color and without the usual black hairs; those on the other segments are of the usual character but with rather dense pollen. Hypopygium black with green reflections on basal portion; its lamellae (fig. 210*a*) large, somewhat quadrilateral, the upper and lower edges nearly parallel and the apex truncate with a rather acute point extending from upper corner; they are twice as long as wide, white with rather narrow black border on apical and the outer half of upper margin, jagged and bristly on apical margin, with long delicate yellowish hairs at the extreme point and along the upper edge for a short distance; the rest of upper edge with short black hairs; below they are fringed with a few small pale hairs.

Fore coxae wholly, middle and hind coxae largely yellow, the middle and hind ones blackened on most of their outer surfaces; fore coxae with anterior surface covered with minute yellow hairs, sometimes with a few black ones at base on outer edge; femora and tibiae yellow. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge from before the middle nearly to their tips with yellow hairs, these hairs of somewhat equal length and about three-fourths as long as the width of the femora; they are continued nearly to the base of the femora by very short yellow hairs. Middle tibiae with three bristles below, two near apical third and one near basal third, their basitarsi with one large bristle above near apical third. Posterior tibiae a little thickened; the usual glabrous stripe on upper surface is somewhat broken by a few hairs, but is quite distinct and extends inside of the inner row of large bristles, quite widely so near the base. Fore tarsi (fig. 210*b*) one and a half times as long as their tibiae; first two joints yellow, second very thin, one-fourth longer than first, glabrous on the sides, with a row of conspicuous, but short, black hairs, of uniform length on both edges; last three joints black, compressed, taken together two-thirds as long as first, third a little longer than fourth and slightly shorter than fifth, a little widened, more so at tip, fourth slightly wider than third, about as wide as long, fifth nearly orbicular in outline, tipped with little white hairs, which are quite conspicuous. Middle and hind tarsi black from the tip of the first joint, the former about one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 210) tinged with yellowish brown; costa a little enlarged at tip of first vein, tapering to its tip; second and third veins considerably arcuated and bent backward at tip; last section of fourth vein bent before its middle; beyond this bend it is a little arched; hind margin of wing notched at tip of fifth vein; anal angle cut off nearly parallel with sixth vein, not rounded, the wing being narrowed at its base.

Female.—Face wide, grayish; hind femora without cilia; fore tarsi plain, one and a fourth times as long as their tibiae, black from the tip of the first joint; fifth joint as long as third, fourth shorter; wings with the veins less arcuated and the anal angle slightly more rounded.

Redescribed from the type which was taken in California; 2 males and 2 females taken at Corvallis, Oregon, July (Aldrich); 2 males taken at Salem, Oregon, July 4; and 1 female taken at Fieldbrook, California, May 31.

The male and female both sometimes have a second bristle on upper edge of middle basitarsi before the middle, which is smaller than the one near basal third.

Types.—University of Kansas and in Aldrich collection.

No. 211. DOLICHOPUS SUPERBUS, new species.

Male.—Length 5.5–7 mm.; of wing 6–7 mm. General color, pollen of thorax, face and front, bristles of middle tibiae and basitarsi, and form of wing, the same as in *grandis* Aldrich, except that the bend on the last section of fourth vein is at or very near basal third and the anal angle of wing is slightly more rounded (fig. 211). The hypopygial lamellae (fig. 211*b*) are long and narrow, being four times as long as wide; they taper abruptly and nearly evenly at tip into a rather long and acute point; are white with a moderately wide black border around the apical end; there are one or two branched bristles below the point at tip; this point is black and fringed with long, delicate yellowish hairs, both above and below as well as at tip; some of these hairs may have a brownish color, upper edge fringed with black hairs and lower edge with little pale hairs. Middle and hind femora each with one preapical bristle, the latter with a few yellowish hairs on lower inner edge near apical third, the longest being nearly half as long as width of femora; they become shorter rapidly both toward base and tip, although continued the whole length of the femora by minute yellow hairs; there are scarcely enough of these hairs to call them cilia. Hind tibiae as in *grandis*. Fore tarsi (fig. 211*a*) one and two-thirds times as long as their tibiae; first three joints yellow, still the third is sometimes almost black, second and third very thin, glabrous on the sides, second fringed on edges with black hairs as in *grandis;* third joint a little wider than the second, nearly twice as long as fourth, and fully as long as fifth, which is a little longer than in *grandis;* fifth joint oval with a few white hairs at tip, but they are not conspicuous as in *grandis;* fourth and fifth joints black, the fourth longer than wide.

Female.—Is almost like that of *grandis*; still the third vein is a little straighter and therefore more parallel with fourth; the bend in fourth vein is a very little nearer the cross vein, and perhaps the face is a little more white in color than that of *grandis.*

Described from 3 males and 2 females taken in Monterey County, California, July 12.

Type.—Male, Cat. No. 23060, U.S.N.M.

No. 212. DOLICHOPUS RUFICORNIS Loew.

Dolichopus ruficornis Loew, Neue Beitr., vol. 8, 1861, p. 21; Mon. N. Amer. Dipt., pt. 2, 1864, p. 63.

Male.—Length 4.3–5 mm.; of wing 4–4.5 mm. Face of moderate width, a little wider above, silvery white. Front shining green, usually with blue or violet reflections. Antennae (fig. 212*a*) yellow; third joint about one and one-half times as long as wide, nearly straight above, rounded below, pointed at tip. Lateral and inferior orbital cilia white, about four of the upper cilia on each side black.

Thorax green with slight bronze, and usually with conspicuous blue reflections; dorsum dulled with a little grayish pollen; pleurae with white pollen. Abdomen green with bronze reflections; the white pollen on its sides abundant. Hypopygium black, more or less yellowish on upper side; its lamellae of moderate size, somewhat orbicular, white with a narrow black border on the apical margin, jagged and bristly at lower corner, fringed above with little black hairs.

Coxae, femora, and tibiae yellow, almost whitish; middle coxae with a blackish streak on outer surface; fore coxae with white pollen and very minute white hairs on the anterior side, these hairs so small that the surface appears almost glabrous. Middle and hind femora each with one preapical bristle, the latter with very minute white hairs on the lower half, and ciliated on lower inner edge with long, delicate white hairs, the longest of which are slightly longer than the width of the femora. Middle tibiae with one bristle on lower anterior edge near basal third, their basitarsi without a bristle above. Posterior tibiae only slightly thickened; the usual glabrous stripe on upper surface narrow and reaching from near the base to apical third; there is also a glabrous streak on inner surface from the base to near their middle. Fore tarsi (fig. 212*b*) nearly one and three-fourths times as long as their tibiae; first four joints pale yellow, fifth black, compressed, nearly orbicular, still a little wider at tip; second joint three-fifths as long as first, third three-fourths as long as second, fourth about one-fourth as long as third, and about equal to fifth in length, very slightly widened at tip; middle and hind tarsi more than one and one-fourth times as long as their tibiae, darkened toward their tips, but not black; posterior basitarsi with two large bristles above. Calypters and halteres pale yellow, the former with black cilia.

Wings (fig. 212) grayish, usually with a yellowish tinge which is more conspicuous along the front of the wing; veins yellowish brown; costa yellow on inner edge with a small knot-like enlargement at tip of fourth vein; last section of fourth vein bent before its middle; hind margin of wing a little indented at tip of fifth vein, nearly evenly rounded, the anal angle being obsolete.

Female.—Face wider than in the male, silvery white; hind femora without cilia, but with minute white hairs on lower half; fore tarsi plain, about one and one-third times as long as their tibiae; all tarsi only a little darkened toward their tips; costa without an enlargement at tip of fifth vein; anal angle of wing more prominent than in the male, still it is rounded off.

Redescribed from the type material and 6 males and 1 female. Two males and the female were taken at Fayetteville, Arkansas, July 30–August 15; 1 male at Lawrence, Kansas; 2 males in Erie County, New York (1 at East Aurora, July 12; 1 on Grand Island, August 18); and 1 male at Niagara Falls, New York, July 20.

Type locality—Middle States.

Type.—Museum of Comparative Zoology, Cambridge, Massachusetts.

No. 213. DOLICHOPUS LONGIPENNIS Loew.

Dolichopus longipennis LOEW, Neue Beitr., vol. 8, 1861, p. 13; Mon. N. Amer. Dipt., pt. 2, 1864, p. 57.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 13, pl. 1, fig. 8.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 148.—JOHNSON, Bull. Amer. Mus. Nat. Hist., vol. 32, 1913, p. 64.

Male.—Length, 5–6 mm.; of wing, 6–7 mm. Face rather wide, a little narrowed below, silvery white, more or less tinged with yellow above. Front green, sometimes with blue reflections, shining but with thick gray pollen along the orbits. Antennae yellow; third joint more or less blackened at tip, a little longer than wide, obtusely pointed. Lateral and inferior orbital cilia pale yellow, about eight of the upper cilia on each side black.

Thorax green, usually with a narrow median and wide lateral stripes of a bronze or coppery color on the dorsum; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and reaching upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat elliptical, nearly twice as long as wide, white with a wide black border on apical margin, which extends narrowly along the upper edge; jagged and bristly at apex, fringed above with a few bristle-like hairs.

Coxae, femora, and tibiae yellow. Middle coxae more or less blackened on outer surface; anterior surface of fore coxae covered with white pollen and delicate yellow hairs, sometimes with a few minute black hairs along the inner edge. Middle and hind femora each with one preapical bristle, the latter without cilia, but with a row of minute yellow hairs on lower inner edge. Middle tibiae with three bristles below, two near apical and one near basal third, their basitarsi with a large bristle near apical third. Posterior tibiae a little thickened; the usual glabrous stripe on upper surface distinct, but a little broken by a few hairs; just inside of the inner row of large bristles is another narrow glabrous stripe extending their whole length and uniting with the upper one at the tip of the tibiae. Fore tarsi (fig. 213*a*) one and a fourth times as long as their tibiae, yellow with the last two and a half joints black; first two joints plain, second joint fully three-fourths as long as first; last three joints scarcely at all compressed, taken together about as long as second; third and fourth joints fringed above with long black hairs, fifth somewhat orbicular and fringed above with little black hairs. Middle tarsi blackened from the tip of the first joint, still the second often yellowish. Hind tarsi deep black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 213) long, narrowed toward the root, grayish, more or less tinged with yellowish brown; costa with a small knot-like enlargement at tip of first vein; last section of fourth vein bent beyond its basal third, the posterior angle of this bend often bears a stump; hind margin of wing a little indented at tip of fifth vein; there is a slight lobe at tip of sixth vein and another at the anal angle, with a shallow sinus between them.

Female.—Very like the male, except the face is wider, and there is only a slight indication of the lobe at tip of sixth vein, the hind margin being more broadly rounded and the anal angle slightly cut off from the tip of the sixth vein.

Redescribed from many males and females from the following locations: Lafayette, Indiana, May 19–July 4; Merchantville, New Jersey, (Johnson), June 28; Plummers Island, Maryland, July 28; Chain Bridge, District of Columbia, June 15; East Falls Church, Virginia, (Banks), August 3; Irving, New York, August 26; Ithaca, New York; Montgomery County, Pennsylvania, July 4; Ohio; Columbia, Missouri, June 1; Knoxville, Tennessee, May 21 (Summers); North Carolina; Florida; Lawrence, Kansas, July; Waubamic, Ontario, June 14 (Parish).

Type localities.—Middle States and Washington, District of Columbia. Melander and Brues report it from Vancouver Island; Johnson from Florida.

No. 214. DOLICHOPUS SAROTES Loew.

Dolichopus sarotes Loew, Cent., vol. 7, 1866, No. 81.—Melander and Brues, Biol. Bull., vol. 1, 1900, p. 148.—Aldrich, Cat. N. Amer. Dipt., 1905, p. 304, note.

Male.—Length 5–5.5 mm.; of wing 5–5.7 mm. Face wide, only a little narrowed below, silvery white. Front green, sometimes with blue or violet reflections. Antennae yellow; third joint about as long as wide, obtusely pointed at tip, sometimes infuscated on apical half. Lateral and inferior orbital cilia yellowish, about eight of the upper cilia on each side black.

Thorax green, usually with bronze reflections; dorsum usually with three coppery vittae, the median one narrow and sharply defined, dulled with a little grayish pollen, especially along the front; pleurae dulled with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black with metallic reflections on basal portion; its lamellae of moderate size, somewhat elliptical, nearly twice as long as wide, yellowish or whitish with a black border, which is wide on apical, narrow on upper margin, jagged and bristly at apex, fringed on upper edge with rather long black hairs, below with a few small pale hairs.

Coxae, femora and tibiae yellow. Middle coxae blackened on outer side; fore coxae with white pollen and little pale hairs on their anterior surface, mixed with the pale hairs on apical third are a few minute black ones, which also cover the inner edge to their base. Middle and hind femora each with one preapical bristle, the latter nearly bare below, still with a row of little yellow hairs on lower inner edge. Middle tibiae with three bristles below, two at apical and one at basal third, their basitarsi with one large bristle above near apical third. Posterior tibiae a little thickened, the usual glabrous stripe on upper surface distinct but broken; inner surface with a glabrous spot near basal third, where the tibiae are slightly more thickened, from the spot extending to the tip is a glabrous line, formed by the omission of a single row of little hairs. Fore tarsi (fig. 214) one and a fourth times as long as their tibiae, yellow, black from the middle of the third joint; second joint scarcely two thirds as long as first, last three joints taken together scarcely as long as the second, black; third and fourth fringed above with long black hairs, slightly compressed, fourth about as wide as long, fifth joint nearly orbicular, fringed above with little black hairs. Middle and hind tarsi black from the tip of the first joint, the former a little longer than their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (figs. 214*a*) grayish; inner edge of costa yellowish; costa with a slight elongated enlargement at tip of first vein; last section of fourth vein bent just beyond its basal third, sometimes the posterior angle of this bend bears a stump; hind margin of wing distinctly indented at tip of fifth vein; anal angle very prominent.

Female.—Face wide, white; fore tarsi plain, first joint slightly longer than the two following taken together, second more than half as long as first and about as long as third and fourth taken together, fifth scarcely as long as fourth, last three joints black, still the base of third more or less yellow; wing as in the male, except that the anal angle is not quite so prominent.

Redescribed from five males and two females, the males were taken as follows: One at Delaware Water Gap, New Jersey, July 11; two at Lafayette, Indiana, July 4; one at Toronto, Ontario, June 13; and one at Fort Erie, Ontario, July 4.

Type locality.—Illinois. Melander and Brues report it from Wisconsin.

Aldrich in a note in the Catalogue of North American Diptera gives the color and size of the third joint of fore tarsi as a distinguishing character of this and *longipennis.* I do not find these characters reliable, at least they are not very certain, but the two species are readily separated by the form of the anal angle of the wing, in *sarotes* the anal angle is very prominent and evenly rounded, the wing being of nearly equal width, while in *longipennis* it is rather prominent but much narrowed and there are two small lobes one at tip of sixth vein and one at the anal angle; they are also separated by the second joint of fore tarsi being nearly as long as the first in *longipennis* and scarcely two-thirds as long as first in *sarotes*.

No. 215. DOLICHOPUS CUPRINUS Wiedemann.

Dolichopus cuprinus WIEDEMANN, Auss. Zw., vol. 2, 1830, p. 230.—SAY, Journ. Acad. Sci. Phila., vol. 3, 1823, p. 86, complete works, vol. 2, p. 76 (both *cupreus*, preoccupied).—LOEW, Neue Beitr., vol. 8, 1861, p. 20; Mon. N. Amer. Dipt., pt. 2, 1869, p. 55.—ALDRICH, Kansas Univ. Quart., vol. 2, 1893, p. 12, pl. 1, fig. 7.—MELANDER and BRUES, Biol. Bull., vol. 1, 1900, p. 148.—JOHNSON, Insects of New Jersey, 1909, p. 756.

Male.—Length 4–6 mm.; of wing 4–5.3 mm. Face wide, only a little narrowed below, silvery white, slightly tinged with yellow above. Front green, sometimes blue, or even dark violet, shining. Antennae yellow; third joint a little longer than wide, pointed at tip, which is sometimes a little infuscated. Lateral and inferior orbital cilia yellowish white, with five or six stout black cilia on each side above.

Thorax green with bronze and usually blue reflections, and with three coppery vittae on the dorsum, the median one narrow and sharply defined (in one specimen before me the dorsum is deep violet and the vittae are dark green); dorsum a little dulled with grayish pollen; pleurae with whitish pollen. Abdomen green with bronze and coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat elliptical, white or yellowish white with a black border, which is broad on lower apical corner, jagged and bristly at apex, fringed above with a few black hairs.

Coxae, femora, and tibiae yellow. Middle coxae blackened on outer surface; fore coxae with white pollen and delicate little white hairs on anterior surface, and with a few small black hairs at base on inner edge, which sometimes extend narrowly to the tip. Middle and hind femora each with one preapical bristle, the latter ciliated on lower inner edge with long yellow hairs, the longest of which are longer than the width of the femora, these long hairs begin near the middle of the femora and do not reach the tip, on the basal half of the femora the hairs become much shorter and are very short toward the base. Middle tibae with three bristles below, two near apical and one near basal third, their basitarsi with one large bristle above near apical third. Posterior tibiae but little thickened; the usual glabrous stripe on upper surface distinct but not quite reaching the base; inner surface largely glabrous; on apical fourth it is narrowed to a line inside of the inner row of large bristles. Fore tarsi (fig. 215) nearly one and a half times as long as their tibiae, first two joints taken together nearly as long as the tibia, slender, yellow, second joint two-thirds as long as the first; last three joints taken together as long as the second, third with its basal half or more whitish, apex black, scarcely widened, fringed on upper edge with long, dense, black hairs; fourth and fifth joints taken together scarcely as long as third, fourth slightly longer than fifth and a little wider, fringed above with black hairs which are not as long as those on the third joint. Middle and hind tarsi black from the tip of the first joint, the former about one and a fourth times as long as their tibiae. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 215*a*) grayish, slightly tinged with brown in front; costa with a very slight enlargement at tip of first vein; last section of fourth vein bent at right angles before its middle and with a stump at the posterior bend; anterior bend usually rounded, very rarely with a sharp right angle and a stump; third vein bent backward a very little toward the tip but usually running parallel with the fourth at tip; hind margin of wing slightly indented at tip of fifth vein, evenly rounded, the anal angle being rounded and not very prominent.

Female.—Face wider than in the male and more grayish, hind femora without cilia; fore tarsi plain, a little longer than their tibiae, the first joint about as long as the three following taken together, fourth very slightly longer than fifth; hind tibae without the glabrous surface on inside.

Redescribed from numerous specimens from the following places: Portland, Maine, July 9; Evanston, Illinois, July; Hancock, Maryland, May 29; Milbank, South Dakota; Lafayette, Indiana, June 11;

Hartford, Connecticut, June 15; New Jersey, July 14; Western New York, June 14–September 6; Fort Erie, Ontario, June 20; Toronto, Ontario, July 4–12: Kearney, Ontario, July 27; Montreal, Quebec, July 21.

Type locality.—Maryland. Loew reports it from Virginia and Nebraska; Aldrich from Massachusetts and Kansas; Melander and Brues from Illinois, Wisconsin, Wyoming; Johnson from Jamesburg, New Jersey, July 4, Dover, New Jersey, June 16, Merchantville, New Jersey, June 28.

No. 216. DOLICHOPUS ABSONUS, new species.

Male.—Length 5–6 mm.; of wing 5.5–6 mm. Face wide, silvery white, tinged with yellow above, a little narrowed below. Front shining green, sometimes with blue reflections. Antennae yellow; third joint a little longer than wide, obtusely pointed at tip, which is sometimes a little infuscated. Lateral and inferior orbital cilia yellowish white, about six of the upper cilia on each side black.

Thorax green or blue-green, with coppery reflections, which usually form three vittae on the dorsum, the median one narrow and sharply defined; dorsum a little dulled with gray pollen; pleurae with white pollen. Abdomen green with coppery reflections; the white pollen on its sides abundant and extending upon the dorsum. Hypopygium black; its lamellae of moderate size, somewhat elliptical in outline, about twice as long as wide, whitish with a black apical border, which is widest at upper corner, jagged and bristly at apex, fringed above with a few black hairs.

Coxae, femora and tibiae yellow. Middle coxae blackened a little on outer surface; fore coxae with white pollen and delicate little whitish hairs on anterior surface, sometimes with numerous little black hairs along inner edge. Middle and hind femora each with one preapical bristle, the hind ciliated with long yellowish white hairs on lower inner edge for nearly their whole length; these hairs are of nearly equal length, and not over one-half as long as the width of the femora, sometimes much shorter than that, so they could scarcely be called cilia. Middle tibiae with three bristles below, two near apical and one at basal third, their basitarsi with one bristle near apical third. Posterior tibiae only slightly thickened, the usual glabrous stripe on upper surface distinct but narrow, the inner surface largely glabrous, still the glabrous portion narrowing toward their tips and reduced to a narrow line on apical fourth. Fore tarsi (fig. 216) about one and a third times as long as their tibiae, the first two joints taken together being as long as the tibia, second two-thirds as long as first, both yellow; third joint with its basal half white, apical half black, a little less than half as long as second, compressed, fringed above with long dense black hairs which begin before the middle of the joint, usually preceded by a single long hair nearer the base; fourth and fifth joints deep black, of nearly equal length, fourth about as wide as long, fringed above with black hairs which are shorter than those on third joint, fifth narrower than fourth, oval, fourth and fifth taken together about equal to third in length. Middle and hind tarsi about one and a half times as long as their tibiae, black from the tip of the first joint. Calypters and halteres yellow, the former with black cilia.

Wings (fig. 216*a*) grayish, slightly tinged with brown in front: costa with a small elongate enlargement at tip of first vein; last section of fourth vein bent at a right angle before its middle, the posterior bend with a stump, the anterior bend usually rounded, but sometimes it is also a right angle, rarely there is no stump at either bend; third vein bent backward at tip a very little; hind margin of wing a little indented at tip of fifth vein; anal angle prominent, extending a very little toward the root of the wing.

Female.—Face wide; fore tarsi plain, black from the middle of the third joint; wing about as in the male, hind femora without cilia.

Described from many males and females: Grand Island, Erie County, New York, August 7–29; Buffalo, New York, September 2 (Van Duzee); Battle Creek, Michigan (Aldrich); Fort Erie, Ontario, July 2; Ridgeway, Ontario, July 6–September 6; Montreal, Quebec. August 17.

This differs from *cuprinus* Loew in the shorter cilia of the hind femora, and the more compressed and larger third joint of fore tarsi, which is also fringed with longer and denser hairs, the anal angle of the wing is much more prominent in *absonus* than in *cuprinus*.

Type.—Male, Cat. No. 23061, U.S.N.M.

No. 217. DOLICHOPUS MICROPYGA Wahlberg.

Dolichopus micropyga WAHLBERG, Vet. Akad. Förhandl., 1850, p. 216.—ZETTERSTEDT, Dipt. Scand., vol. 11, 1852, p. 4278.

Two females that may be this species were taken in Colorado by Baker. They are a little longer than the description would call for and the tibiae seem to be a little different color, the four anterior ones being wholly yellowish and the posterior ones almost wholly black, as I understand Zetterstedt the tibiae should all be testaceous or yellowish with black tips, still in most points they agree with his description.

They have the face wide, whitish; front shining green; lateral and inferior orbital cilia whitish yellow, about eight of the upper cilia on each side black. Thorax and abdomen green, the former dulled with brownish pollen. Coxae black, anterior pair with black hairs on the front side; anterior femora black with yellow tips; middle femora yellowish with the lower edge black for two-thirds their length; hind femora yellowish with upper and lower edges black; fore and middle tibiae wholly yellowish, the former with one bristle below, their bastarsi without a bristle above. Middle and hind femora each with one preapical bristle; hind tibiae black, a very little yellowish above at base; fore tarsi yellowish, a little infuscated from the tip of the first joint; middle and hind tarsi black, the former with the first joint a little tinged with yellow. Calypters and halteres yellow, the former with black cilia.

Wings dark grayish; last section of fourth vein bent just before its middle; hind margin of wing not indented at tip of fifth vein; anal angle prominent.

Type.—In University of Lund, Sweden, from Europe.

No. 218. DOLICHOPUS AETHIOPS, new species.

Female.—Length, 5.2 mm.; of wing, 5.7 mm. Face wide, yellowish brown, the black ground color showing through its pollen. Front and occiput opaque, with yellowish brown pollen. Antennae wholly black, still the first joint appears gray on the lower edge when viewed from below; lateral and inferior orbital cilia yellowish, almost the color of the pollen of the face, about eight of the upper cilia on each side black.

Dorsum of the thorax greenish, but so thickly covered with yellowish brown pollen as almost to conceal the ground color; pleurae more blackish with gray pollen. Abdomen greenish with coppery reflections and wide black incisures, rather thickly covered with grayish white pollen.

Coxae, femora, tibiae and tarsi black, with the articulations of the femora and tibiae yellowish; middle tibiae with one large bristle below, their basitarsi without a bristle above; posterior basitarsi with two large bristles above. Calypters and halteres yellow, the former with black cilia.

Wings dark grayish or brownish, the veins narrowly bordered with brown; last section of fourth vein a little bent before its middle; hind margin of wing not indented at tip of fifth vein, rather evenly rounded; wings wide, widest just before the tip of fifth vein; anal angle prominent.

Described from 1 female taken by J. M. Aldrich at Lafayette, Indiana, March 28.

Type.—Female, Cat. No. 23062, U.S.N.M.

I am describing this rather remarkable form from the female, as it seems to me that the male will very easily be recognized when found.

No. 219. DOLICHOPUS, species.

A female taken in Alaska which has the cilia of the calypters yellow, antennae mostly yellow, and the middle tarsi wholly deep black. It does not seem best to give this a name without more specimens, in fact not until the male is found; still it seems to be an entirely new form and quite interesting, therefore I have run it into the table of species and mentioned it here. Professor Hine took it in Alaska.

PLATES.

By F. R. COLE.

EXPLANATION OF PLATES.

The numbers correspond in all cases except No. 217 to the number assigned to the species in the text. There are six species for which we have no drawing, Nos. 13, 76, 81, 118, 139, 143. What should have been number 130 has been placed at the end of the drawings as No. 217, it being made after most of the plates were made up.

PLATE 1.

FIGS. 1–17*a*: 1, *calainus* Melander and Brues, hypopygial lamella; 2, *monticola*, new species, wing of male; 2*a*, same, antenna of male; 3, *barbaricus*, new species, wing of male; 3*a*, same, antennae of male; 4, *sordidatus*, new species, wing of male; 4*a*, same, hypopygial lamella; 5, *formosus*, new species, wing of male; 5*a*, same, hypopygial lamella; 6, *squamosus*, new species, wing of male; 6*a*, same, middle tibia and tarsus; 7, *viridis*, new species, wing of male; 7*a*, same, antenna; 8, *nigrimanus*, new species, wing of male; 8*a*, same, hypopygial lamella; 9, *nigricauda*, new species, wing of male; 9*a*, same, hypopygial lamella; 10, *ovatus* Loew, hypopygial lamella; 10*a*, same, antenna of male; 11, *myosota*, Osten Sacken, wing of male; 11*a*, same, hypopygial lamella; 12, *multisetosus*, new species, wing of male; 12*a*, same, hypopygial lamella; 14, *detersus*, Loew, wing of male; 14*a*, same, hypopygial lamella; 15, *enigma* Melander and Brues, wing of male; 15*a*, same, hypopygial lamella; 15*b*, same, antenna of male; 16, *adaequatus*, new species, wing of male; 16*a*, same, hypopygial lamella; 16*b*, same, antenna of male; 17, *paluster* Melander and Brues, wing of male; 17*a*, same, antenna of male.

PLATE 2.

FIGS. 18–32*a*: 18, *tetricus* Loew, fore tarsus of male; 19, *manicula*, new species, wing of male; 19*a*, same, fore tarsus of male; 20, *corax* Osten Sacken, fore tarsus of male (inverted); 21, *acricola*, new species, wing of male; 21*a*, same, fore tarsus of male; 22, *stenhammari* Zetterstedt, wing of male; 22*a*, same, hypopygial lamella; 23, *argentipes*, new species, wing of male; 24, *acuminatus* Loew, hypopygial lamella; 24*a*, same, antenna of male; 25, *beatus*, new species, hypopygium of male; 26, *demissus*, new species, wing of male; 26*a*, same, antenna of male; 26½, *burnsii*, new species, hypopygial lamella; 26½*a*, same, fore tarsus of male (inverted); 27, *conspectus*, new species, wing of male; 27*a*, same, hypopygial lamella; 28, *agronomus* Melander and Brues, wing of male; 28*a*, same, antenna of male; 29, *gratus* Loew, wing of male; 29*a*, same, antenna of male; 30, *calcaratus* Aldrich, wing of male; 31*a*, same, hypopygial lamella; 31, *melanderi*, new species, wing of male; 31*a*, same, hypopygial lamella; 32, *johnsoni* Aldrich, wing of male; 32*a*, same, antenna of male.

PLATE 3.

FIGS. 33–48*a:* 33, *appendiculatus*, new species, wing of male; 33*a*, same, middle tibia of male; 33*b*, same, middle tarsus of male (inverted); 34, *fumosus*, new species, wing of male; 34*a*, same, antenna of male; 35, *convergens* Aldrich, wing of male;

35*a*, same, antenna of male; 36, *nubifer*, new species, wing of male; 37, *barbicauda*, new species, hypopygial lamella; 37*a*, same, antenna of male; 38, *bisetosus*, new species, hypopygial lamella; 38*a*, same, antenna of male; 39, *intentus* Melander and Brues, hypopygial lamella (copied); 40, *angusticornis*, new species, antenna of male; 40*a*, same, hypopygial lamella; 41, *aequalis*, new species, wing of male; 41*a*, same, hypopygial lamella; 41*b*, same, fore tarsus of male; 42, *litoralis*, new species, hypopygial lamella; 42*a*, same, wing of male; 43, *packardi*, new species, wing of male; 44, *xanthocnemus* Loew, wing of male; 44*a*, same, antenna of male; 45, *albiciliatus* Loew, wing of male; 45*a*, same, hypopygial lamella; 46, *alacer*, new species, wing of male; 46*a*, same, hypopygial lamella; 47, *partitus* Melander and Brues, wing of male; 47*a*, same, antenna of male; 48, *setifer* Loew, wing of male; 48*a*, same, antenna of male.

PLATE 4.

FIGS. 49–60: 49, *retinens*, new species, anterior tibia and tarsus; 49*a*, same, wing of male; 50, *remipes* Wahlberg, wing of male; 50*a*, same, posterior tarsus of male (inverted); 51, *sedulus*, new species, wing of male; 51*a*, same, hypopygial lamella; 52, *groenlandicus* Zetterstedt, wing of male; 52*a*, same, hypopygial lamella; 53, *incongruus* Wheeler, wing of male; 53*a*, same, hypopygial lamella; 54, *remus*, new species, wing of male; 54*a*, same, hypopygial lamella; 54*b*, same, middle tibia of male; 54*c*, same, middle tarsus of male (inverted); 55, *adultus*, new species, wing of male; 55*a*, same, hypopygial lamella; 55*b*, same, antenna of male; 56, *fusiformis*, new species, wing of male; 56*a*, same, hypopygial lamella; 57, *umbrosus*, new species, wing of male; 57*a*, same, hypopygium of male; 58, *laticornis* Loew, wing of male; 58*a*, same, antenna of male; 59, *nodipennis*, new species, wing of male; 59*a*, same, antennae of male; 60, *solidus*, new species, wing of male.

PLATE 5.

FIGS 61–77: 61, *bryanti*, new species, wing of male; 62, *amnicola* Melander and Brues, wing of male; 62*a*, same, antenna of male; 63, *opportunus*, new species, wing of male; 63*a*, same, hypopygial lamella; 63*b*, same, antenna of male; 64, *humilis*, new species, wing of male; 64*a*, same, antenna of male; 65, *brevicauda*, new species, wing of male; 65*a*, same, hypopygial lamella; 65*b*, same, antenna of male; 66, *varipes* Coquillett, wing of male; 66*a*, same, fore tarsus of male; 67, *flavilacertus*, new species, wing of male; 67*a*, same, antenna of male; 68, *rupestris* Haliday, wing of male; 69, *fucatus*, new species, wing of male; 69*a*, same, hypopygial lamella; 70, *apheles* Melander and Brues, wing of male; 70*a*, same, hypopygial lamella; 71, *affluens*, new species, wing of male; 71*a*, same, hypopygial lamella; 72, *discolor*, new species, wing of male; 72*a*, same, hypopygial lamella; 73, *sincerus*, Melander, wing of male; 74, *sincerus*, var. *subdirectus*, new variety, wing of male; 75, *genualis*, new species, wing of male; 75*a*, same, hypopygial lamella; 77, *obsoletus*, new species, wing of male.

PLATE 6.

FIGS. 78–91: 78, *trisetosus*, new species, wing of male; 78*a*, same, antenna of male; 79, *comatus* Loew, middle tibia and basitarsus of male; 79*a*, same, wing of male; 80, *virga* Coquillett, wing of male; 80*a*, same, fore tarsus of male, from above; 82, *pachycnemus* Loew, antenna of male; 82*a*, same, hypopygial lamella; 82*b*, same, hind femora of male; 82*c*, same, fore tarsus of male; 83, *ungulatus* Linnaeus, wing of male; 83*a*, same, hypopygial lamella; 84, *barbipes*, new species, anterior tibia and tarsus of male (inverted); 85, *brevipennis* Meigen, wing of male; 85*a*, same, fore tarsus of male (inverted); 86, *dasyops* Malloch, hypopygial lamella (copied); 87, *ornatipennis*, new species, wing of male; 87*a*, same, hypopygial lamella; 88, *dorycerus* Loew, wing of male; 88*a*, same, antennae of male; 88*b*, same, fore tarsus of male; 89, *socius* Loew, wing of male; 90, *socius*, var. *gladius*, new variety, wing of male; 91, *brevimanus* Loew, wing of male.

PLATE 7.

FIGS. 92–107: 92, *indigena*, new species, wing of male; 92*a*, same, fore tarsus of male; 93, *idoneus*, new species, wing of male; 93*a*, same, hypopygial lamella; 94, *canadensis*, new species, antenna of male; 94*a*, same, fore tarsus; 95, *acutus*, new species, wing of male; 95*a*, same, antenna of male; 96, *defectus*, new species, wing of male; 96*a*, same, antenna of male; 97, *abbreviatus*, new species, lamella of hypopygium; 98, *cuniculus*, new species, hypopygium of male; 98*a*, same, wing of male; 98*b*, same, antenna of male; 99, *brunneus* Aldrich, wing of female; 100, *ramifer* Loew, wing of male; 100*a*, same, hypopygial lamella; 101, *incisuralis* Loew, wing of male; 102, *melanocerus* Loew, wing of male; 102*a*, same, hypopygial lamella; 103, *pantomimus* Melander and Brues, wing of male; 103*a*, same, hypopygial lamella; 104, *flaviciliatus*, new species, wing of male; 104*a*, same, antenna of male; 104*b*, same, hypopygial lamella; 105, *decorus*, new species, wing of male; 106, *setosus* Loew, wing of male; 106*a*, same, hypopygial lamella; 107, *serratus*, new species, wing of male.

PLATE 8.

FIGS. 108–123*b*: 108, *renidescens* Melander and Brues, wing of male; 108*a*, same, hypopygial lamella; 109, *hastatus* Loew, wing of male; 109*a*, same, antenna of male; 110, *comptus*, new species, wing of male; 110*a*, same, antenna of male: 111, *dorsalis*, new species, wing of male; 112, *abrasus*, new species, hypopygial lamella; 113, *marginatus* Aldrich, hypopygial lamella; 114, *reflectus* Aldrich, wing of male; 115, *albicoxa* Aldrich, wing of male; 115*a*, same, fore tarsus of male; 116, *pilatus*, new species, antenna of male; 116*a*, same, fore tarsus of male; 117, *porphyrops*, new species, wing of male; 117*a*, same, antenna of male; 117*b*, same, hypopygial lamella; 117*c*, same, antenna of female; 119, *plumitarisis* Fallen, last four joints of fore tarsus (inverted); 120, *pollex* Osten Sacken, wing of male; 120*a*, same, fore tarsus of male; 121, *obcordatus* Aldrich, hypopygial lamella; 121*a*, same, fore tarsus of male: 122, *pernix* Melander and Brues, wing of male; 122*a*, same, hypopygial lamella; 122*b*, same, fore tarsus of male from above; 123, *blandus*, new species, wing of male (number omitted on plate, it is just below fig. 121*a*); 123*a*, same, hypopygial lamella; 123*b* same, fore tarsus of male.

PLATE 9.

FIGS. 124–136*a*: 124, *vigilans* Aldrich, wing of male; 124*a*, same, fore tarsus of male; 125, *flagellitenens* Wheeler, wing of male; 125*a*, same, hypopygial lamella; 125*b*, same, fore tarsi of male; 126, *bifractus* Loew, wing of male; 126*a*, same, fore tarsus of male; 127, *pugil* Loew, wing of male; 127*a*, same, fore tibia of male; 127*b*, same, fore tarsus of male; 128, *plumipes* Scopoli, wing of male; 128*a*, same, middle tibia and tarsus of male from above; 129, *dasypodus* Coquillett, wing of male; 131, *flavipes* Loew, wing of male; 131*a*, same, antenna of male; 131*b*, same, wing of female; 132, *flavicoxa*, new species, wing of female; 132*a*, same, hypopygial lamella; 133, *variabilis* Loew, antenna of male; 133*a*, same, hypopygial lamella; 134, *variabilis*, var. *gracilis* Aldrich, wing; 135, *luteipennis* Loew, wing of male; 136, *greenei*, new species, wing of male; 136*a*, same, hypopygial lamella.

PLATE 10.

FIGS. 137–149*a*: 137, *wheeleri* Melander and Brues, wing of male; 137*a*, same, wing of female; 137*b*, same, middle tarsus of male from above; 138, *longimanus* Loew, wing of male; 138*a*, same, last four joints of fore tarsus of male; 138*b*, same, hypopygial lamella; 140, *amplipennis*, new species, wing of male; 140*a*, same, fore tarsus of male (inverted); 140*b*, same, hypopygial lamella; 141, *splendidus* Loew, wing of male; 141*a*, same, hypopygial lamella; 141*b*, same, last four joints of fore tarsus of male; 142, *splendidulus* Loew, wing of male; 142*a*, same, last four joints of fore tarsus of male; 142*b*, same, hypopygial lamella; 144, *discifer* Stannius, wing of male; 144*a*, same, tip of fore tarsus of male; 145, *boreus*, new species, antenna of male; 145*a*, same, fore tarsus of male (inverted); 146, *angustatus* Aldrich, wing of male; 146*a*, same, last four joints of fore tarsus of male; 147, *compactus*, new species, wing of male; 147*a*, same, fore tarsus of male; 148, *walkeri*, new species, wing of male; 148*a*, same, fore tarsus of male; 149, *speciosus*, new species, wing of male; 149*a*, same, fore tarsus of male (inverted).

PLATE 11.

FIGS. 150–161: 150, *procerus*, new species, wing of male; 150*a*, same, fore tarsus of male; 151, *completus*, new species, wing of male; 151*a*, same, fore tarsus of male; 152, *æratus*, new species, wing of male; 152*a*, same, fore tarsus of male; 153, *sufflavus*, new species, wing of male; 153*a*, same, fore tarsus of male; 154, *coloradensis* Aldrich, fore tarsus of male; 155, *lobatus* Loew, wing of male; 155*a*, same, fore tarsus of male (the *a* is omitted after the numeral); 155*b*, same, wing of female; 156, *omnivagus*, new species, last two and a half joints of fore tarsus (inverted); 157, *amphericus* Melander and Brues, fore tarsus of male (inverted); 158, *afflictus* Osten Sacken, wing of male; 158*a*, same, hypopygial lamella; 159, *crenatus* Osten Sacken, wing of male; 159*a*, same, antenna of male (inverted); 160, *consanguineus* Wheeler, wing of male; 160*a*, same, wing of female; 161, *bruesi* (*propinquus*), new name, wing of male.

PLATE 12.

FIGS. 162–175*b*: 162, *aurifex*, new species, wing of male; 162*a*, same, hypopygial lamella; 163, *idahoensis* Aldrich, wing of male; 164, *cavatus*, new species, wing of male; 164*a*, same, hypopygial lamella; 165, *penicillatus*, new name, wing of male; 166, *misellus* Melander, hypopygial lamella (copied); 167, *chrysostoma* Loew, antenna of male; 168, *parvicornis*, new species, wing of male; 169, *latronis*, new species, wing of male; 169*a*, same, hypopygial lamella; 170, *harbecki*, new species, wing of male; 170*a*, same, wing of female; 170*b*, same, antenna of male; 171, *slossonae*, new species, wing of male; 171*a*, same, hypopygial lamella; 172, *virginiensis*, new species, wing of male; 173, *bakeri* Cole, wing of male; 173*a*, same, hypopygial lamella; 174, *aurifacies* Aldrich, wing of male; 174*a*, same, antenna of male; 174*b*, same, hypopygial lamella; 175, *carolinensis*, new species, wing of male; 175*a*, same, hypopygial lamella; 175*b*, same, wing of female.

PLATE 13.

FIGS. 176–187*b*: 176, *imperfectus*, new species, tip of abdomen and hypopygium of male; 176*a*, same, wing of male; 177, *vittatus* Loew, wing of male; 177*a*, same, hypopygial lamella; 178, *celeripes*, new species, wing of male; 179, *scapularis* Loew, wing of male; 180, *domesticus*, new species, wing of male; 180*a*, same, hypopygial lamella; 181, *latipes* Loew, wing of male; 181*a*, same, middle tarsus of male; 182, *aldrichi* Wheeler, wing of male; 182*a*, same, middle tarsus of male; 183, *bolsteri*, new species, wing of male; 183*a*, same, hypopygial lamella; 184, *tonsus* Loew, wing of male; 184*a*, same, last three joints of fore tarsus of male; 185, *eudactylus* Loew, hypopygial lamella; 185*a*, same, last three joints of fore tarsus of male; 186, *versutus*, new species, wing of male; 186*a*, same, last four joints of fore tarsus of male; 187, *dakotensis* Aldrich, wing of male; 187*a*, same, hypopygial lamella; 187*b*, same, last four joints of fore tarsus of male.

PLATE 14.

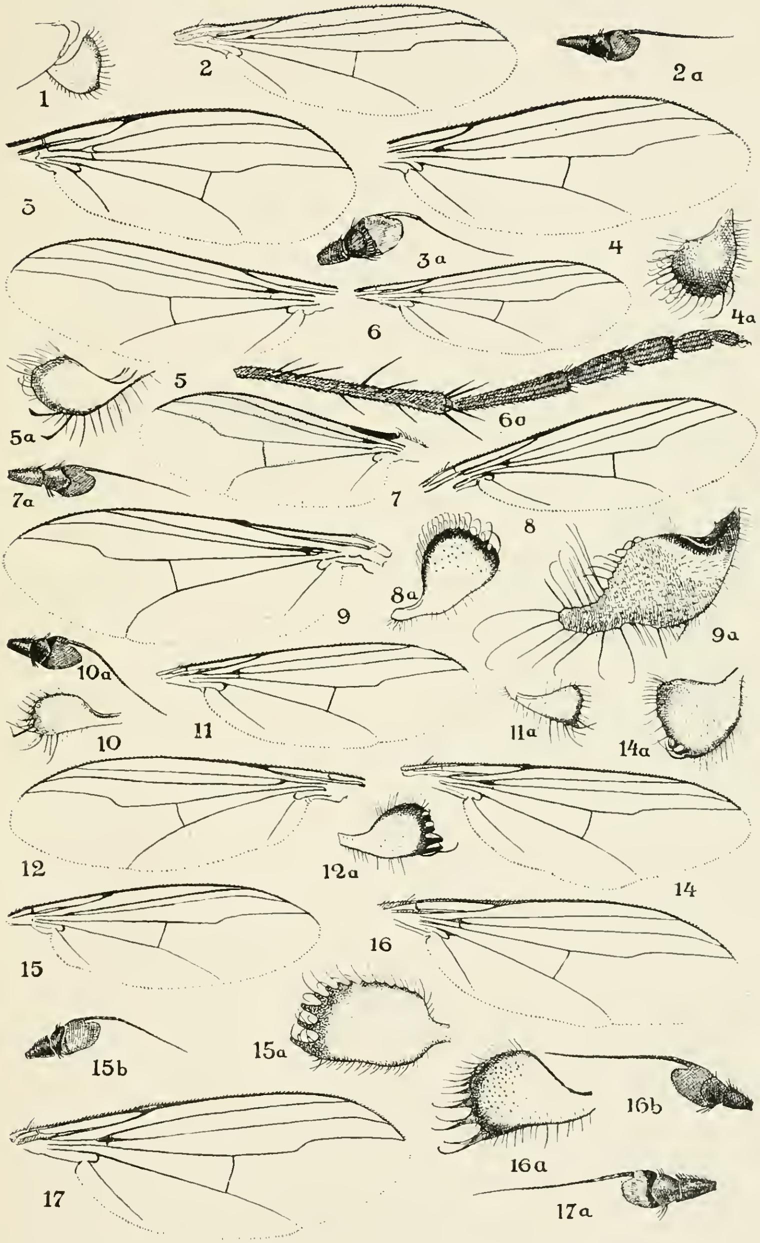
FIGS. 188–202*a*: 188, *palaestricus* Loew, wing of male; 188*a*, same, last four joints of fore tarsus of male; 189, *batillifer* Loew, last four joints of fore tarsus of male; 190, *tener* Loew, wing of male; 190*a*, same, last four joints of fore tarsus of male; 191, *sicarius*, new species, wing of male; 191*a*, same, antenna of male; 192, *scoparius* Loew, wing of male; 192*a*, same, fore tarsus of male from above; 193, *quadrilamellatus* Loew, hypopygium of male; 194, *laciniatus* Coquillett, last two joints of fore tarsus of male; 195, *occidentalis* Aldrich, wing of male; 195*a*, same, fore tarsus of male; 196, *talus*, new species, wing of male; 196*a*, same, fore tarsus of male; 197, *coquelletti* Aldrich, wing of male; 197*a*, same, fore tarsus of male; 198, *plumosus* Aldrich, wing of male; 198*a*, same, fore tarsus of male; 199, *ainsliei*, new species, wing of male; 199*a*, same, hypopygial lamella; 199*b*, same, last four joints of fore tarsus of male; 200, *funditor* Loew, wing of male; 200*a*, same; fore tarsus of male; 201, *funditor* var. *distinctus*, new variety, fore tarsus of male, 202, *willistonii* Aldrich, wing of male; 202*a*, same, last four joints of fore tarsus of male.

PLATE 15.

FIGS. 203–210*b*; 203, *sexarticulatus* Loew, wing of male; 203*a*, same, fore tarsus of male; 204, *sphaerietes* Brues, last four joints of fore tarsus of male; 205, *terminalis* Loew, wing of male; 205*a*, same, fore tarsus of male; 206, *canaliculatus* Thomson, wing of male; 206*a*, same, hypopygial lamella; 206*b*, same, last three joints of fore tarsus of male (inverted); 207, *tenuipes* Aldrich, wing of male; 207*a*, same, last three joints of fore tarsus of male; 208, *digitus*, new species, wing of male; 208*a*, same, hypopygial lamella; 208*b*, same, last two and a half joints of fore tarsus of male (inverted); 209, *duplicatus* Aldrich, wing of male; 209*a*, same, hypopygial lamella; 209*b*, same, last four joints of fore tarsus of male; 210 *grandis* Aldrich, wing of male; 210*a*, same, hypopygial lamella; 210*b*, same, last three joints of fore tarsus of male.

PLATE 16.

FIGS. 211–217: 211, *suberbus*, new species, wing of male; 211*a*, same, fore tarsus of male; 211*b*, same, hypopygial lamella; 212, *ruficornis* Loew, wing of male; 212*a*, same, antennae of male; 212*b*, same, fore tarsus of male; 213, *longipennis* Loew, wing of male; 213*a*, same, fore tarsus of male; 214, *sarotes* Loew, fore tarsus of male; 214*a*, same, wing of male; 215, *cuprinus* Wiedemann, fore tarsus of male; 215*a*, same, wing of male; 216, *absonus*, new species, fore tarsus of male; 216*a*, same, wing of male; 217, *uxorcula*, new species, wing of female (should be No. 130).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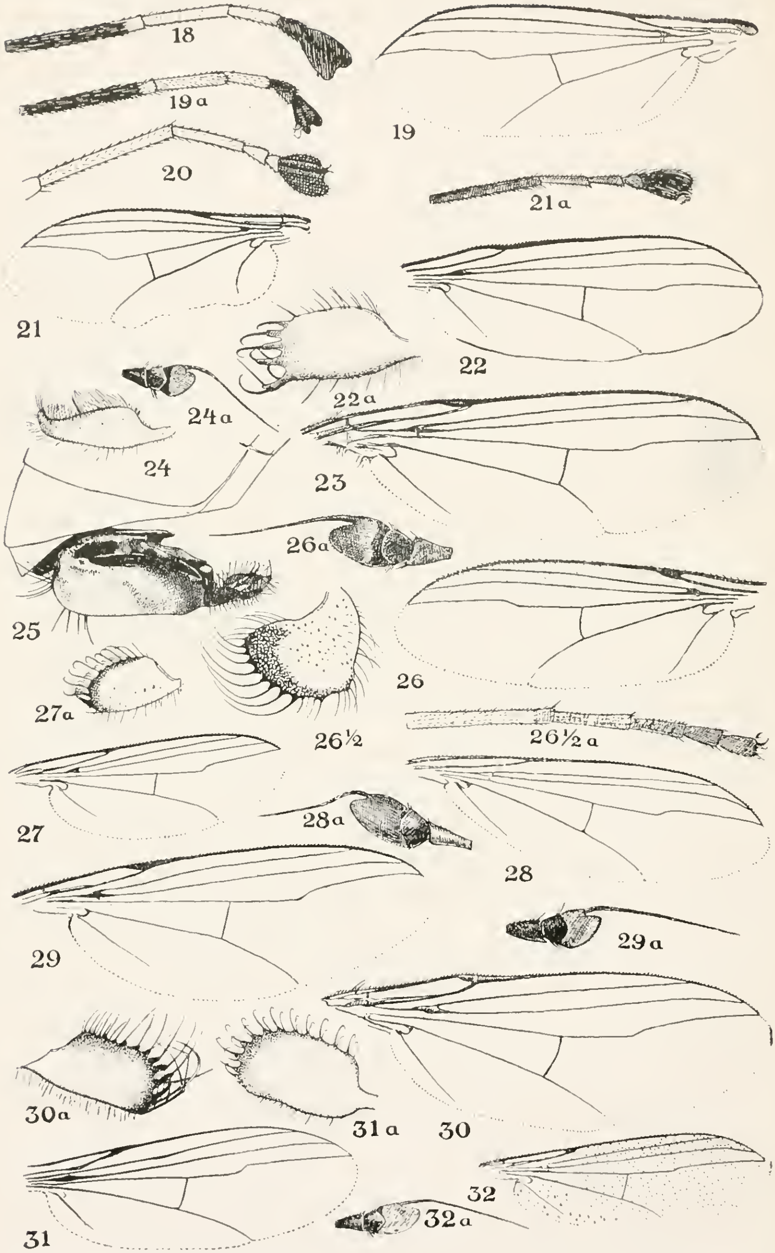
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 297.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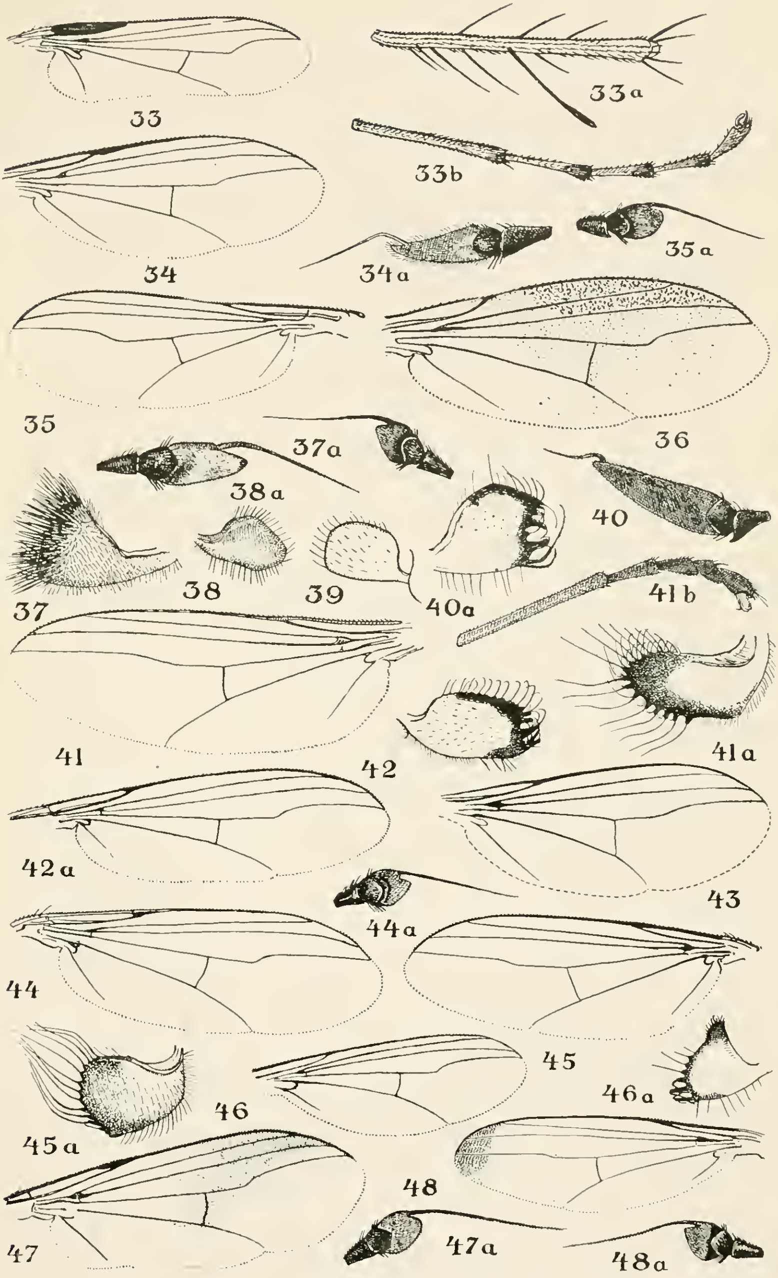
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 297.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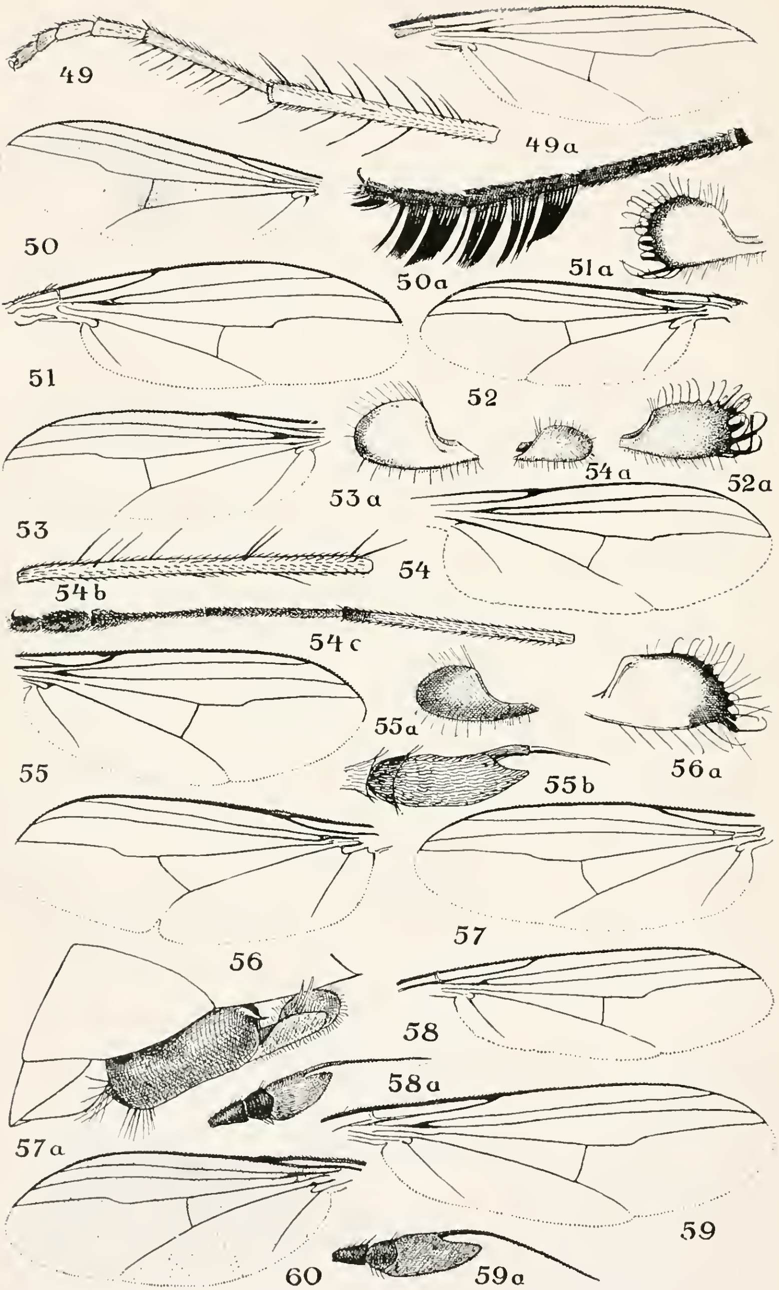
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGES 297 AND 298.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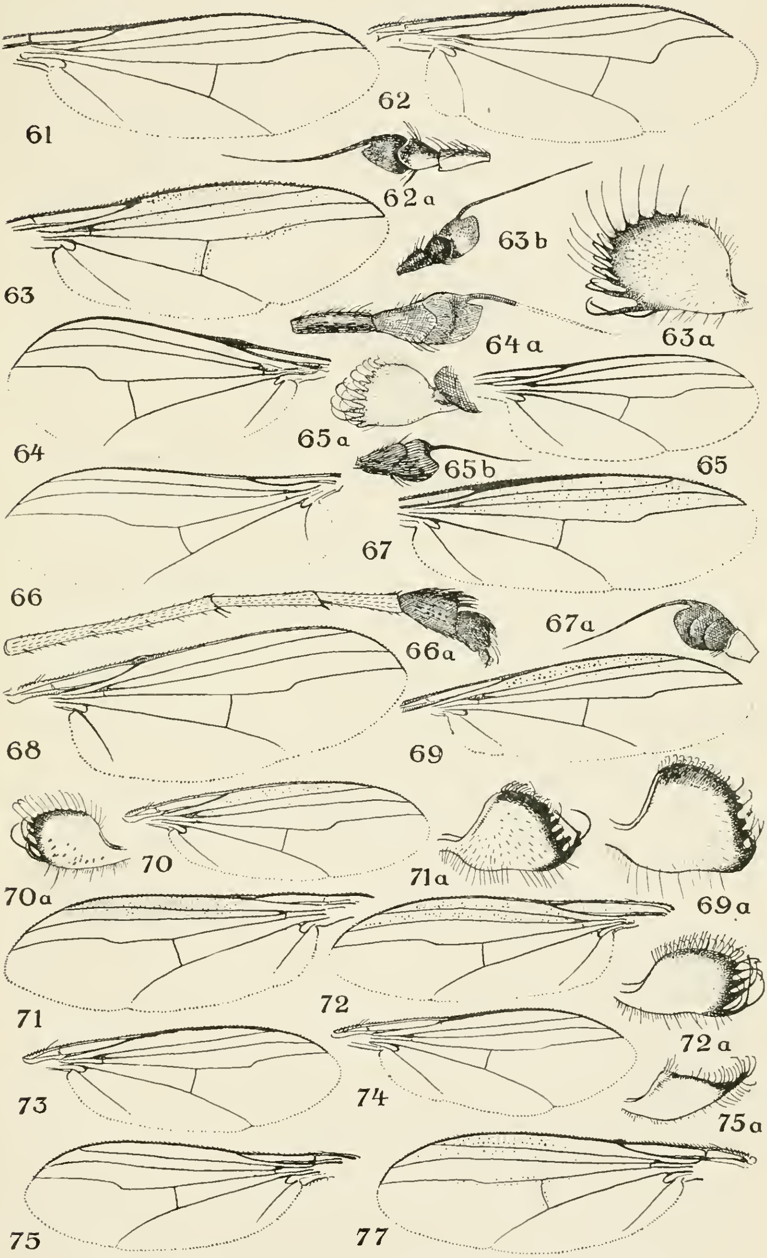
The Dipterous Genus Dolichopus in North America.

For Explanation of Plate see Page 298.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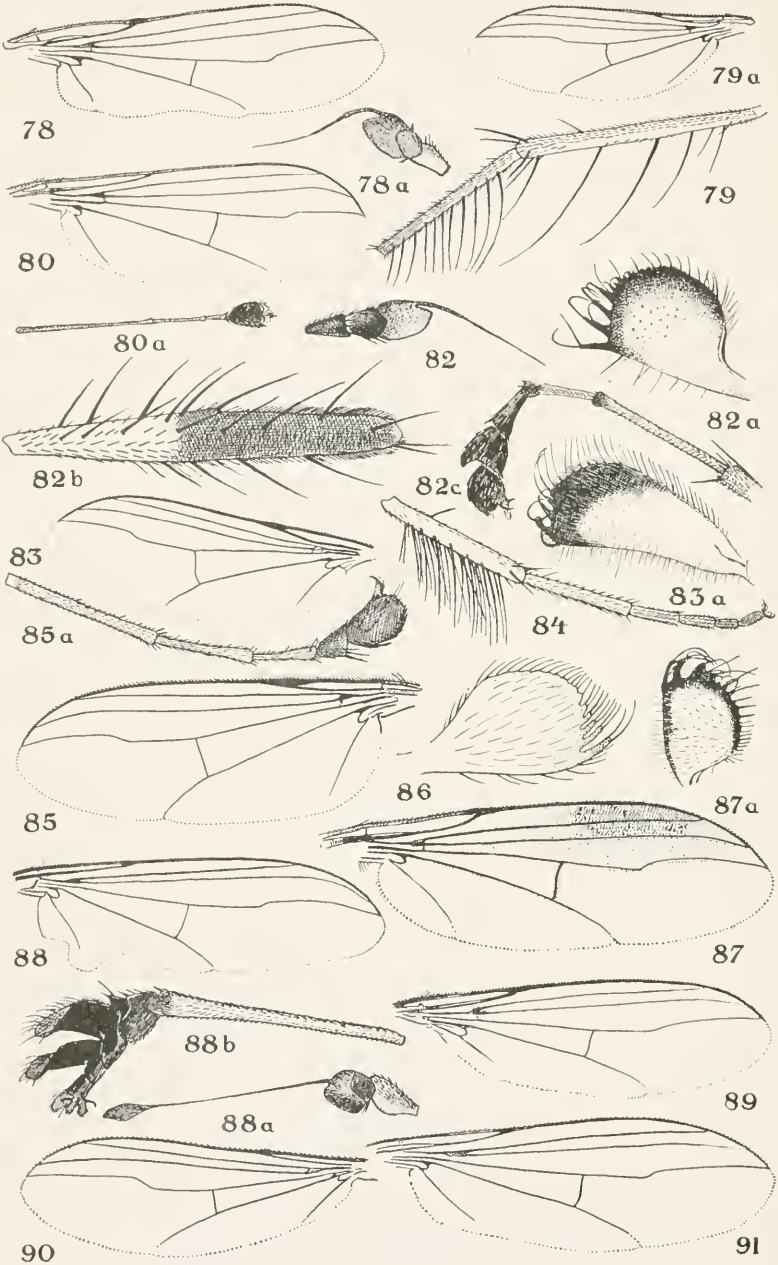
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 298.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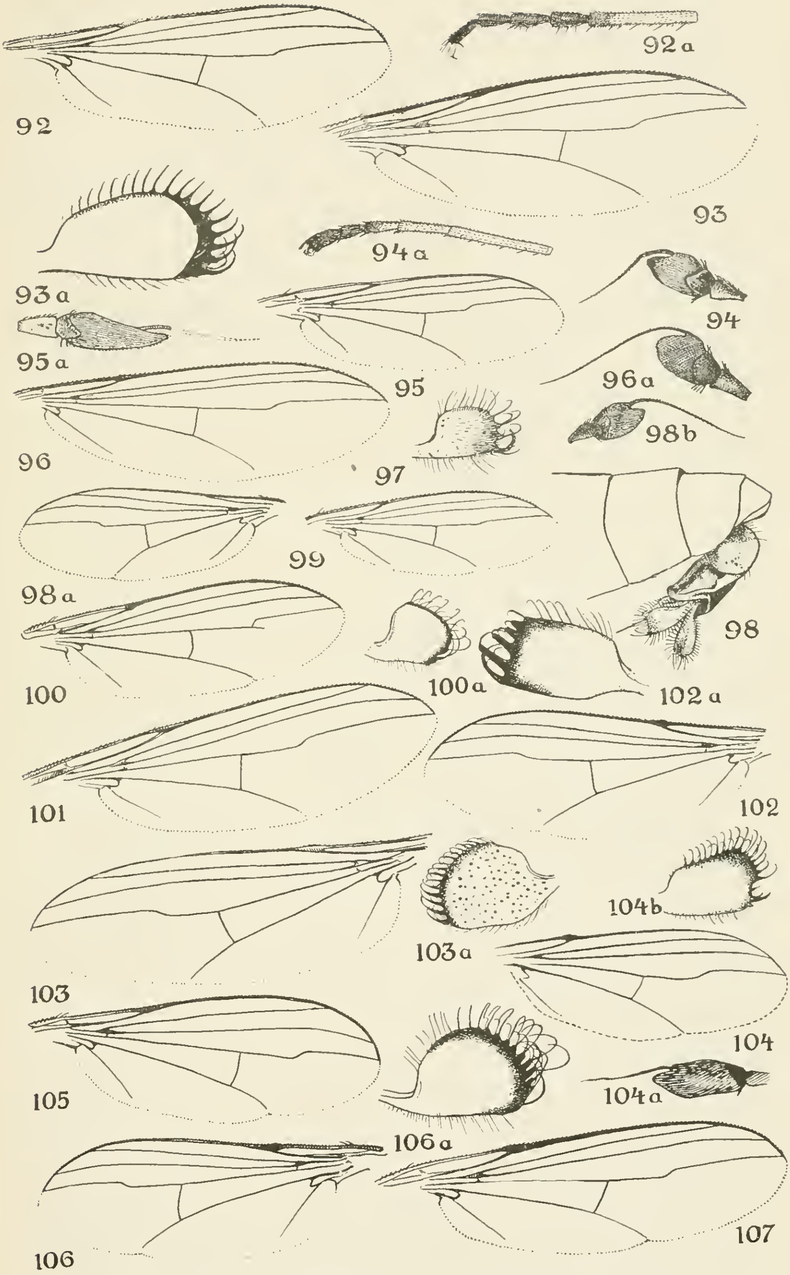
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGES 298 AND 299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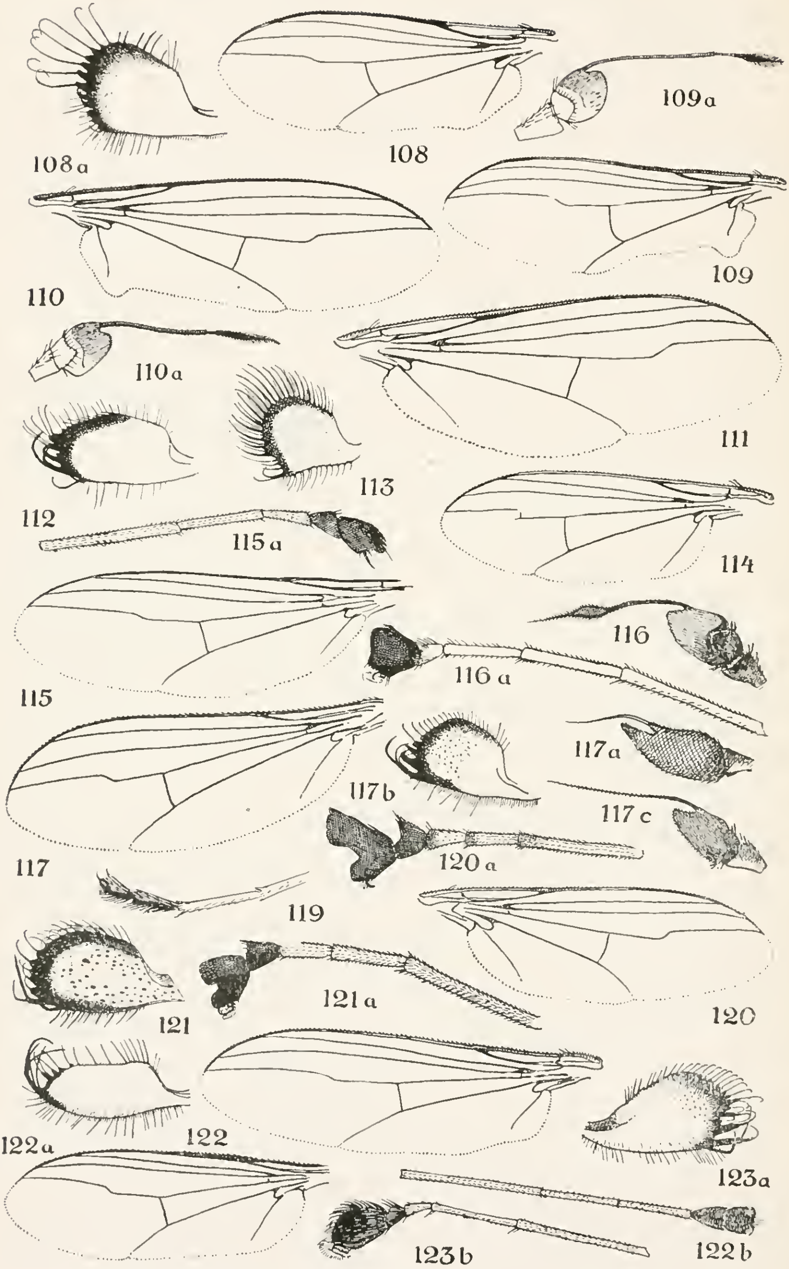
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 299.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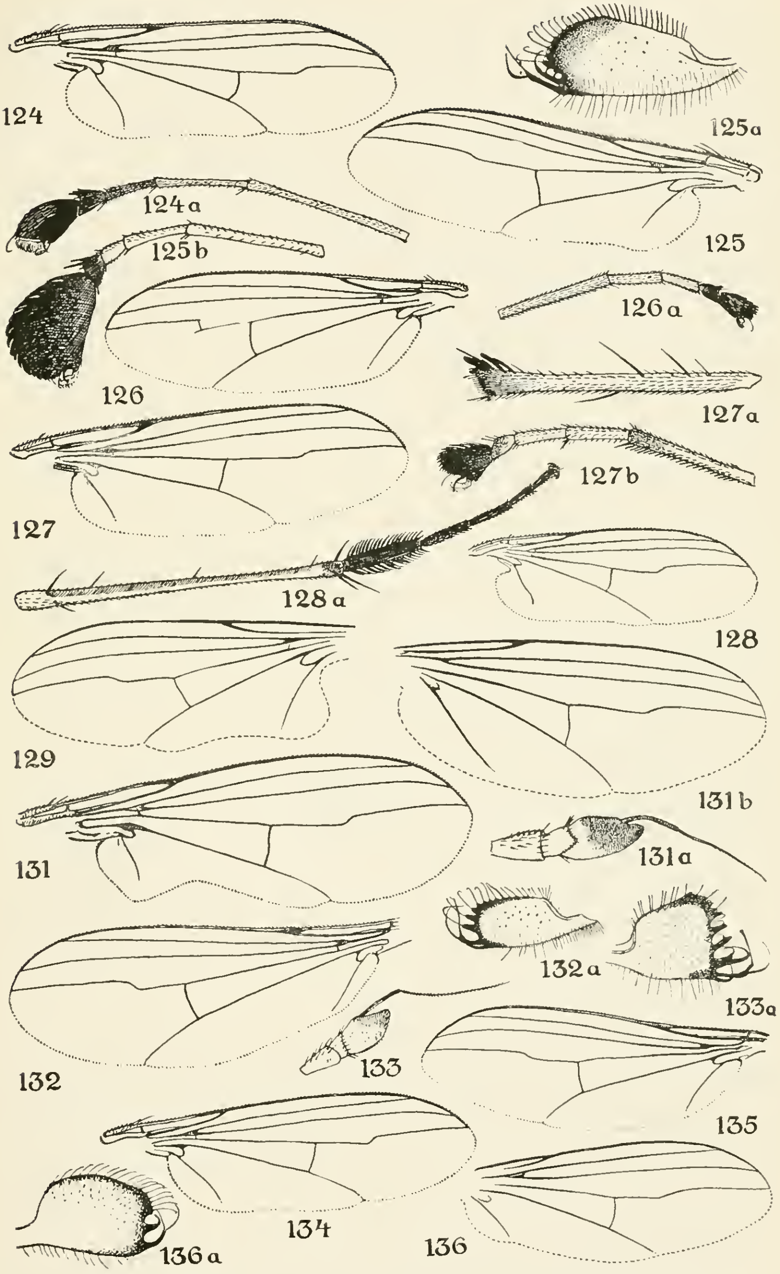
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 299.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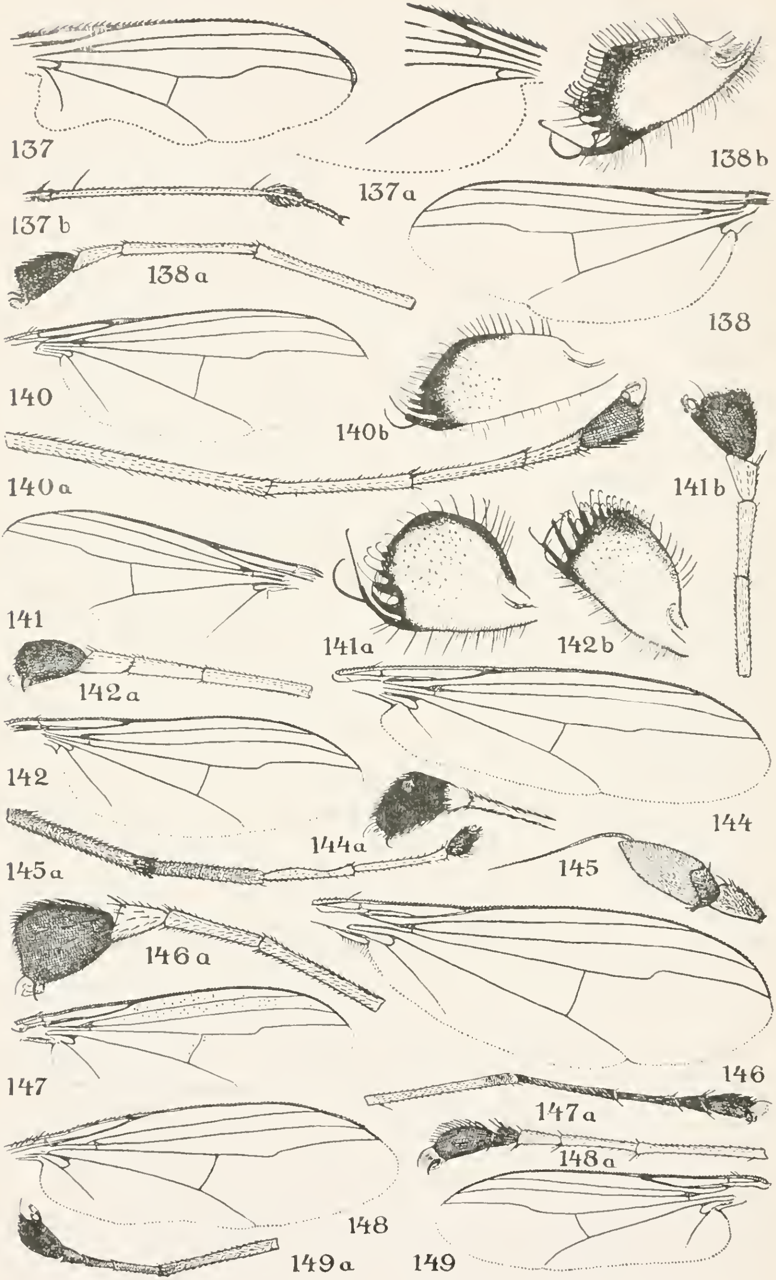
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 299.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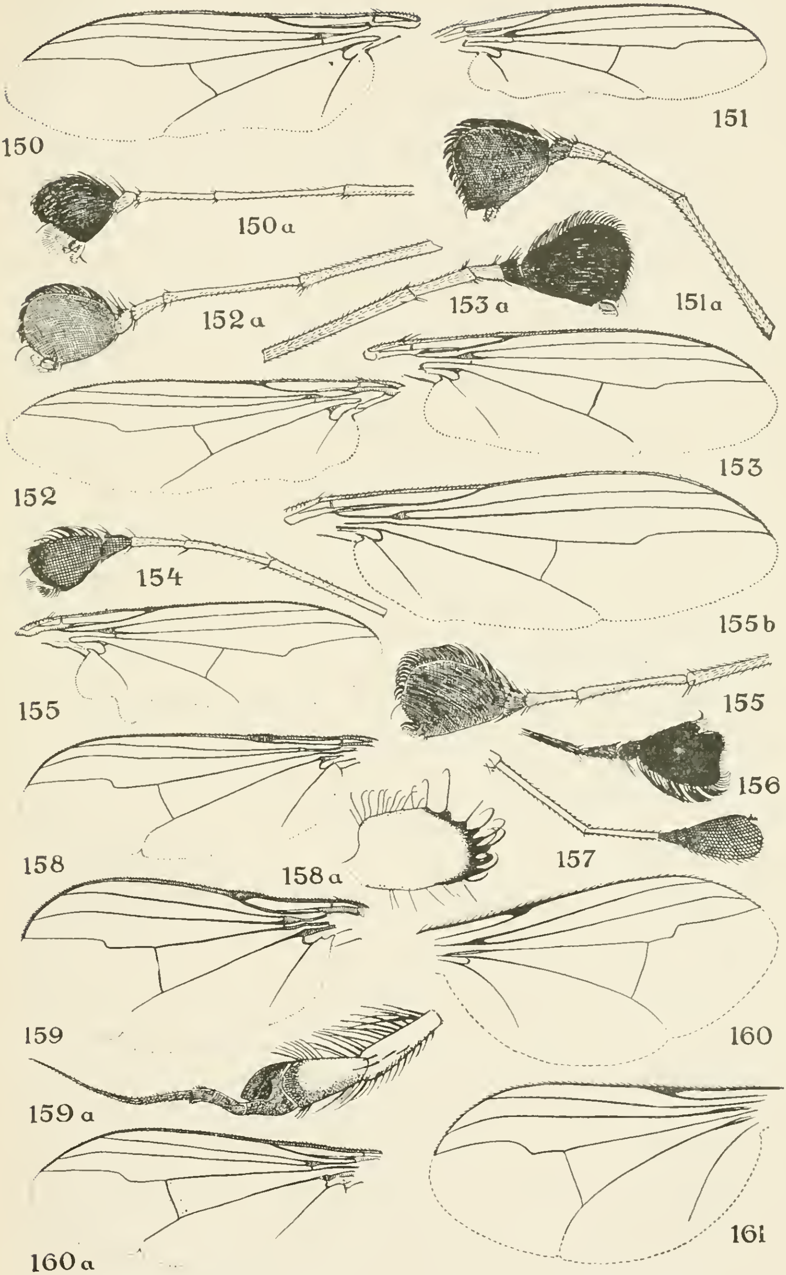
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGES 299 AND 300.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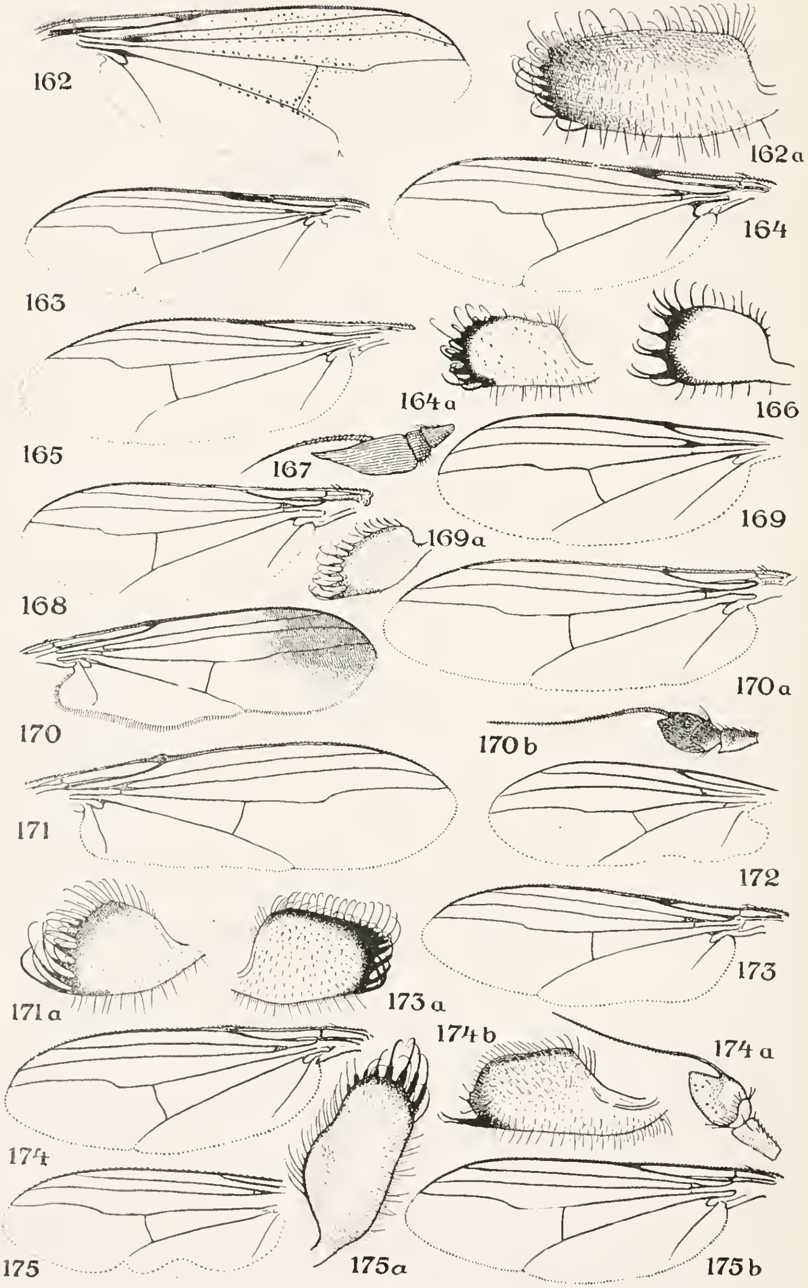
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 300.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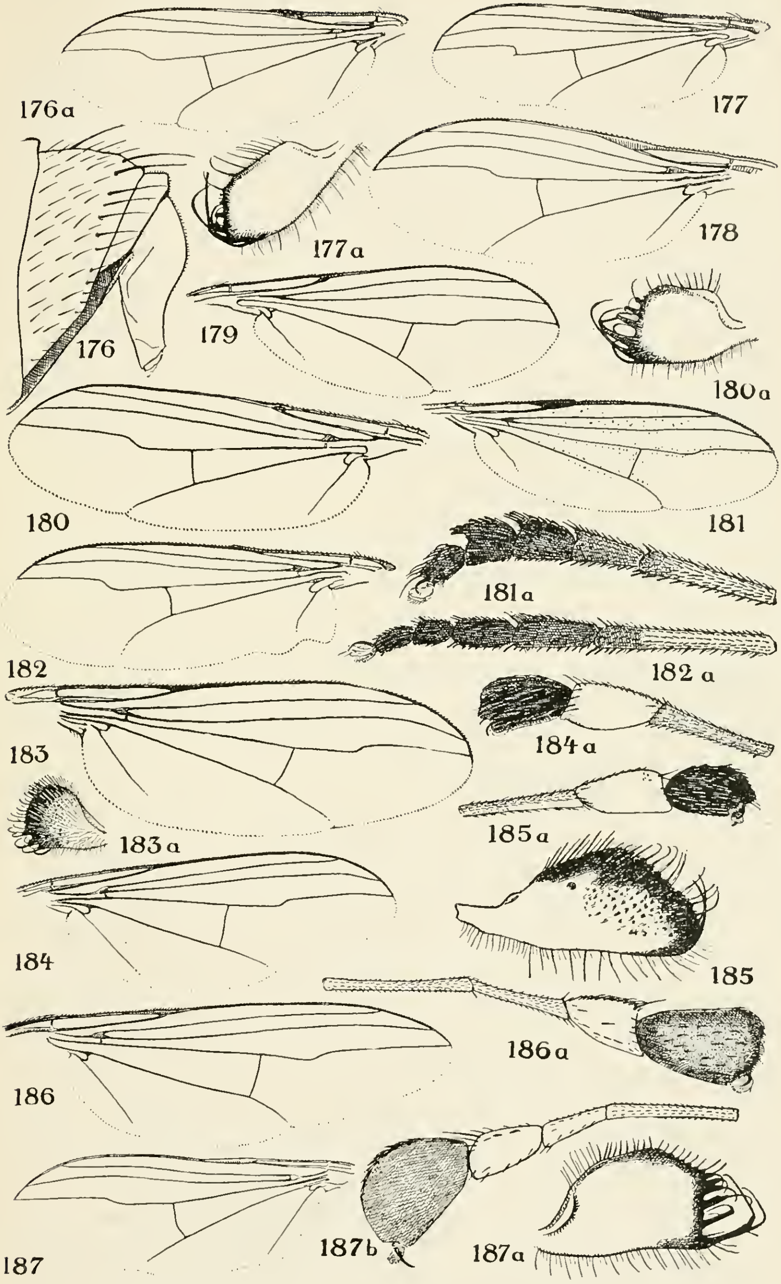
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 300.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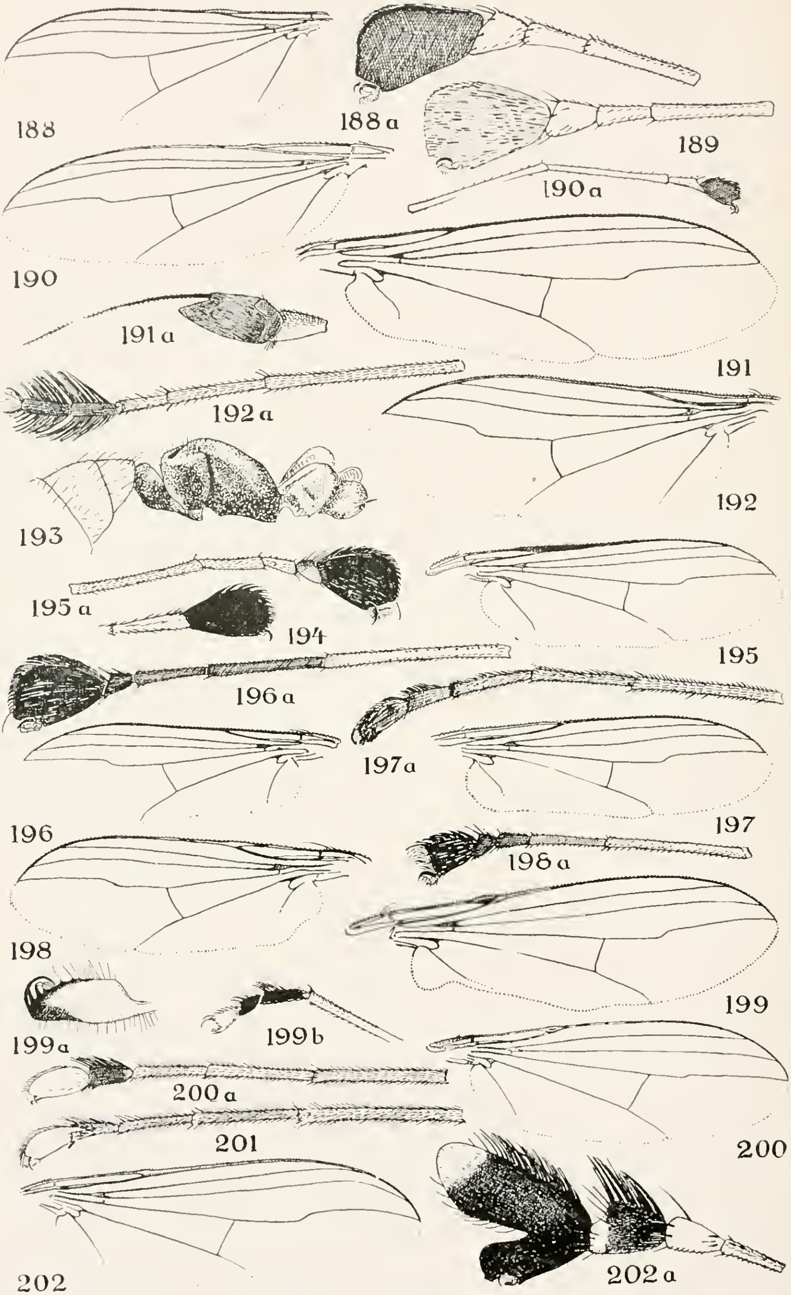
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 300.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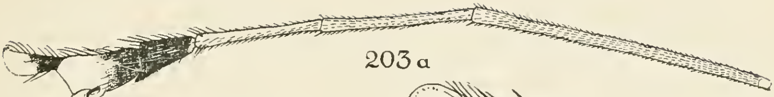
THE DIPTEROUS GENUS DOLICHOPUS IN NORTH AMERICA.

FOR EXPLANATION OF PLATE SEE PAGE 301.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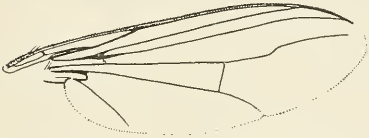
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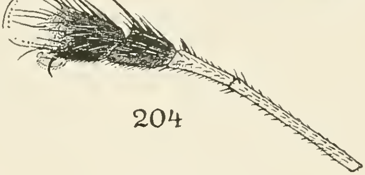
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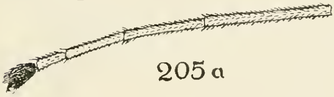
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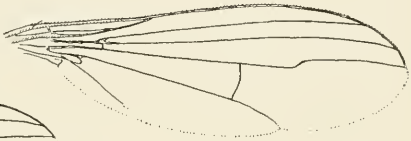
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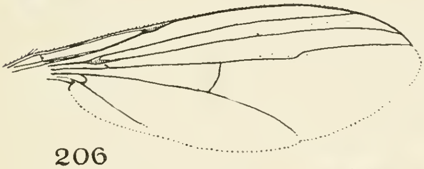
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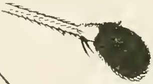
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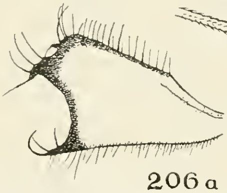
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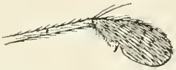
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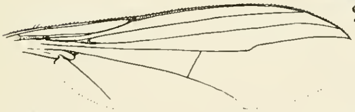
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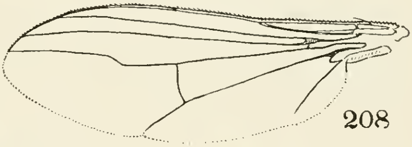
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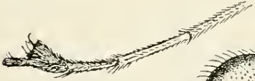
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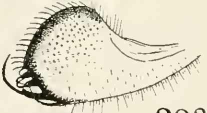
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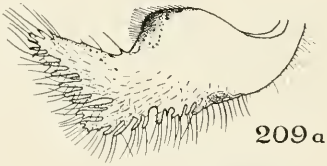
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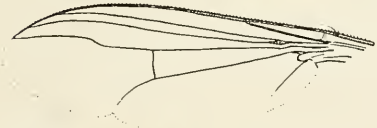
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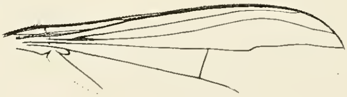
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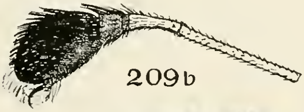
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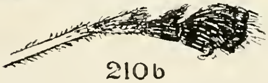
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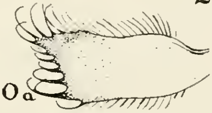
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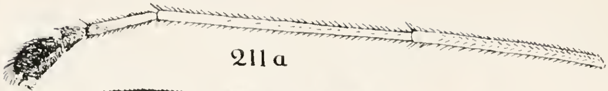
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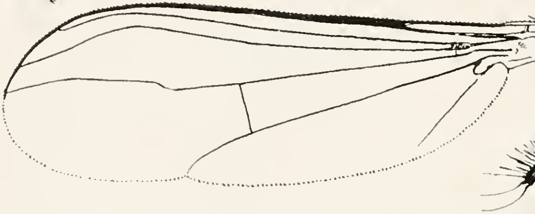
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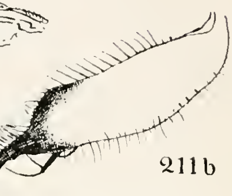
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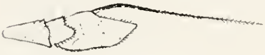
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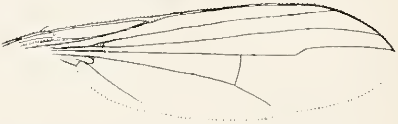
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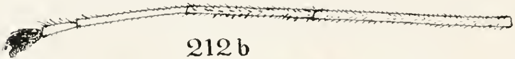
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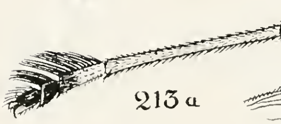
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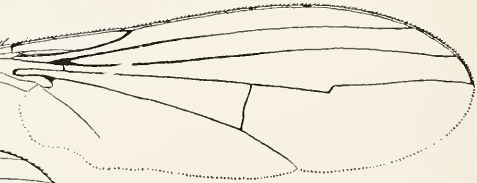
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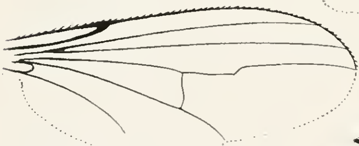
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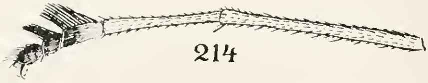
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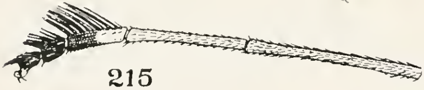
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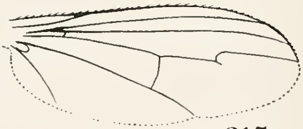
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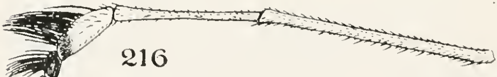
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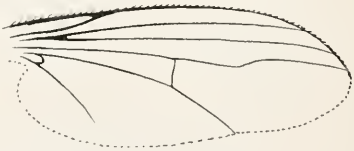
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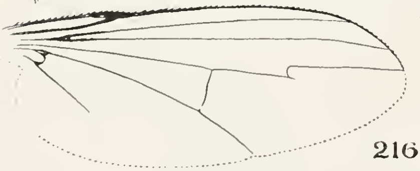
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